

CHEETAL

JOURNAL OF

Wild Life Preservation Society of India

Vol. 10

OCTOBER, 1967

No. 1

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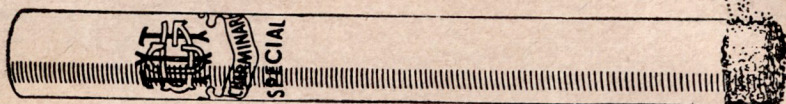
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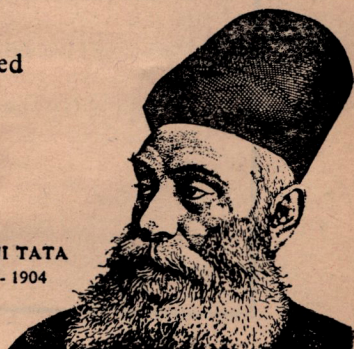
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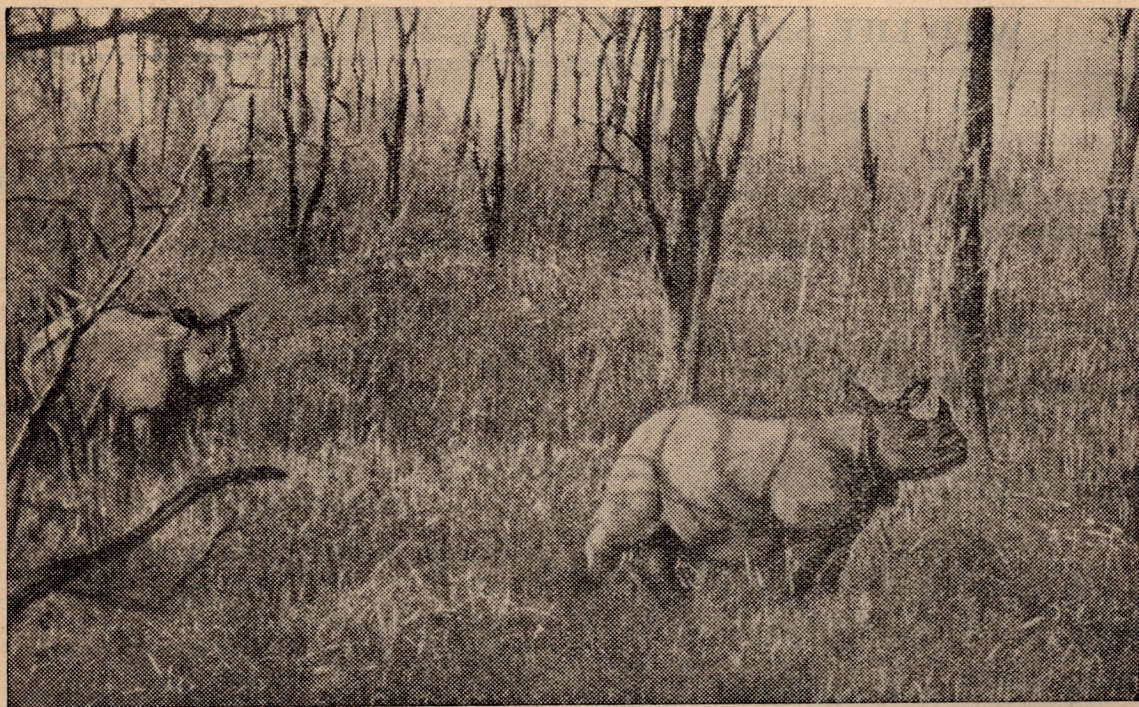
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WILD LIFE SANCTUARIES OF ANDHRA PRADESH

Name, Area & Date of Constitution	Animals & Birds to be seen	Location and Facilities for Visitors
PAKHAL — Wild Life Sanctuary Area :— 339 sq. miles. Constituted in 1952	Tiger, Panther, Bear, Sambar, Cheetal, Nilgai (blue bull), Chinkara, Wild boar and Crocodile and feathered game. Best period for visiting the Sanctuary and for photography is from October to March.	Situated near Pakhal lake in Narasampet taluk, Warangal district. Airport —Begumpet (Hyderabad). Road routes —Mamnoor to Pakhal, Nekonda to Narasampet, Hanamkonda to Narasampet. Transport —Road Transport Corporation buses, private cars or bullock carts. Visitors may alight at Khazipet or Nekonda stations and proceed to Narasampet. Accommodation —Forest Rest Houses at Pakhal, Gudur and near Narasampet.
ETURUNAGARAM Wild Life Sanctuary Area :— 314 sq. miles. Constituted in 1953	Tiger, Panther, Bear, Sambar, Deer, Nilgai, Cheetal, Chinkara, Wild boar, Bison and feathered game. Best months for visiting the sanctuary and for photography are March & Oct.	Situated in Mulag taluk, Warangal Dist., about 40 miles away from Mulag. Airport —Begumpet (Hyderabad). Road routes —Khazipet to Eturunagaram and Mamnoor to Eturunagaram. Rail head —Khazipet Junc. and Warangal Railway Station. Accommodation —Forest Rest Houses at Eturunagaram, Pasra and Tadaval.
QAWAL—Wild Life Sanctuary Area :— 500 sq. miles. Constituted in 1964	Tiger, Panther, Bear, Wild boar, Cheetal, Nilgai, Sambar, Black buck, Barking deer, Wild goat and winged game. Best season for visiting is from January to May.	Situated in Jannaram forest range, Mancheria division, Luxettipet taluk, Adilabad district, 40 miles from Mancheria Railway Station. Airport —Begumpet (Hyderabad). Road route —P.W.D. road from Mancheria railway station. R.T.C. bus runs to the area. Accommodation —Forest Rest Houses at Jannaram, Birsapet.
Birds Sanctuary for breeding Pelicans Area :— Approximately 1,260 sq miles (radius of 20 miles from the centre of Kolleru lake. Constituted in Dec., 1963.	Grey Pelican (<i>Pelicanus phillippense</i> Gmelin). A large greyish stout looking water bird larger than a vulture, having a long neck, short legs and webbed feet called Pelican. Best season for visiting and for photography is from November to March.	Situated in the area lying between the towns of Ganapavaram and Undi in Western Godavari district and within a radius of 20 miles around Kolleru Lake situated at a distance of about 8 miles to the West of Pelicanry. Rail head —Tadepalligudem and Chebrolu stations in Southern railway. Airport —Gannavaram. Road routes —Chebrolu to Bhimavaram via Ganapavaram, Tadepalligudem to Bhimavaram via Ganapavaram. Accommodation —T.B's at Ganapavaram Undi, Akivedu and Bhimavaram.

NOTE—This is the only major breeding centre of the Grey Pelican known to exist in the world, close by there is Kolleru lake which attracts many thousands of birds belonging a large number of species and provides good facilities for the study of birds, migration, etc.



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CHEETAL

Journal of The Wild Life Preservation Society of India

VOL. X

OCTOBER, 1967

No. 1

Ourselves

Half a year has again gone by since we voiced the hope that the Elections would usher stable governments at State and Central level, of whatever political complexion or persuasion. The hope has been largely fulfilled, though anxiety persists in regard to certain areas of instability; the democratic framework has survived the fourth great General Election in the sub-continent, and, indeed, been proved in the process. But stresses and strains show a decided weakening of the federal bond, with administrations of varied texture and composition. The Society is a-political, but the needs of conservation demand enlightenment, vigour and co-ordination, and for these we support all good government.

The effects of enlightenment amongst the decision-making class, the leaders, are as vivid as they are heartening. In each department of the Central Government, in each State of the Union, where the men-at-the-top have been aware of India's problems, conscious of conservation imperatives, our appeals for help, for membership, for greater circulation of 'Cheetal' have been heard. Wherever the men in power have been too involved with in-fighting, with the politics of power rather than the good uses of power, there have the Society's efforts been in vain.

Lord Acton and La Rochefocauld, among others, held the view that power corrupted, and absolute power corrupted absolutely, but we have lately been pondering, rather, the inverse: That where power is in enlightened hands, where power is used for good, there, too, less fettered power is used for even better effect. There is danger here, for autocracy displaces democracy when power is unfettered, but we do wish to make a plea for delegated power, the power to take bold and far-reaching and prompt decisions, rather than the power

of delay which characterises so many individuals and organisations. When we meet up with a man, as we recently did at the Head of a Ministry, who took a decisive step promptly, in ordering the 'Cheetal' for his department in a big way, with, of course, their concurrence, we could not help feeling that another shot of the same kind of individual in Indian political life would not be a bad thing. And how does one get such individuals ?

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That takes us into the field of education. Contemporarily, more than ever before, education will make our leaders, and bad education will make bad leaders. But education to-day is suffering from a levelling compulsion, a democratic falling of standards and values; it is, in the words of Prof. M. Mujeeb, 'one camel in a lost caravan'. We need to inculcate amongst our students, not only values of discipline and duty in general terms, but love of the geographical, the natural environment of India. The environment that fostered the Rig-vedic civilisation's gay love of the hunt and the forest, the same that bred the traditional love and protection for animals and birds in Ashoka's Empire. This love can never be inculcated amongst people living in urban communities at subsistence level. Tribal India might continue to scrape a meagre living off the forest world of their own, but urban communities must needs have living contact with the environment, with grass and trees and forest and the birds and animals, must be brought into contact with these things to learn to appreciate them. All of which brings us back to the need for enlightened leaders, stable governments and sound educational policies. A far cry from technical problems of wild life management, though the latter are crucial, too; a far cry, too, from our own efforts, for the Society can only work on a limited stage and with limited means. Our hopes soar, with all those whose hopes are as enlightened, and we reach out once again to earn the good opinions of these people in positions of power whom we admire.

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Before the publication of our next, the April, issue, we shall have reached our tenth birthday. In the ecology of journals such as ours, motivated in Idealism, and generally marginally supported by voluntary support from patrons or individual contributors and members through altruistic considerations alone, life-expectancy is low, infant and early mortality the rule, rather than the exception. We congratulate ourselves without complacency, and offer thanks to our patrons, among whom our generous and dedicated President, and to our members for their support which has saved us this past decade from a premature end. Inheritors of early movements of the same *genre*, we often think of ourselves, in origin, though not in current status, as the lineal descendents of organisations like the Late Jim Corbett's Association for the Preservation of Game in U.P., of which he and the redoubtable Mr. Hasan Abid Jaffry,

of whom we have failed so far to find trace, were the Honorary Secretaries. Their journal, first appearing in 1936, 'The Indian Wild Life' was short-lived, and we have failed to obtain copies of this, as also in procuring information relating to the birth and early demise of the Association.

To avert a similar tragic fate has been our endeavour, and with the approach of our tenth anniversary next year, we are beginning to believe that we are out of the woods. We now plan to launch an even more intense and energetic circulation campaign to reach our aim of five thousand subscribers, and also to stream-line and further improve our Society and its Journal.

When we pore through files of the 'Cheetal' magazines from the first in October, 1958, to our last issue in April this year, we feel a surge of pride in the immense progress we have made, a feeling of gratitude for the band of honorary workers who have helped make this possible, gratitude, too, to our illustrious predecessor, R.L. Holdsworth, who saw the journal through its early difficult years and set the tone of future growth. And yet, our intimate knowledge of the Society's problems cannot allow us to ignore the dangers we face to-day; these are two-fold:

Our dedicated office informs us that even as we increase our circulation by inducting new members, (more and more, happily, from the younger generation of officers,) simultaneously, the lapsed subscriptions and indifference of older members deplete our membership. This hurts doubly, for these are our original friends, the very people who got the Society going. To them we appeal as old friends, 'lest they forget'.

Secondly, as the Society grows larger in membership as in prestige, more and more highly regarded and under the public eye, our location in Dehra Dun, in one region of India, becomes a disadvantage. We would like to see more branches all over India, and particularly, one in New Delhi, the seat of power, the power of doing good things as of gaining wider recognition and membership. Increasingly, too, we feel the need for a more effective office, with better facilities to make the task of our hard-working Honorary Secretary easier. All these things need the finance which only wider circulation of the 'Cheetal', a larger membership, can provide. We still await the opportunity to convert the 'Cheetal' into a quarterly publication.

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The analysis of our membership published in the first issue of the 'Cheetal' indicated that our members were either largely 'retired' persons over fifty years of age, or the pioneering patrons belonging to the princely orders, who first encouraged the Society, with a low

percentage of active members from the profession, from the age-groups below fifty and even thirty.

A similar analysis now shows the preponderance of enthusiastic younger people, a very large number of student members, and many educational and professional members. This is a healthy trend. We need active members, students, of course, in large numbers, but also researchers in the field, forest officers, army officers and others active in administration and affairs. The older generation have shown us the way, and it is now to the new generation, those who grew up in independence and feel its problems and responsibilities as a fresh challenge, to take over. The new type of member is the man whom we rely upon.

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Just as the new type of conservationist is less of an arm-chairman, less of a complacent 'quoi-hai' always living in the past of rebellion against a foreign regime, less inclined to accept things as they are said to have been, less self-satisfied at the easy and often disastrous results of independence in our chosen sphere of wild life, so, too, is he the more active in the field,

"Quick with the rifle,
niggard of pen,
with valiant deeds, he
won the hearts of men."

Except that the rifle is now replaced by the camera and the binoculars, or, if he can afford it, the tele-lens and the spotter-scope. He roams the fields and the forests and the mountains, we like to believe, doing occasional fishing, possibly bagging an old tiger or cattle-lifter to rid the villages of a nuisance, but less inclined to shoot in lust to kill. He is more scientific and often a real scientist.

The coverage of the 'Cheetal' in the recent issues, when compared with the earlier issues, is more, far more, scientific, technically biased, more factual, more statistical, than ever before. The quality of material, both in the sense of technical competence and artistic form, has improved enormously, as has the format, the language, and the general production of the 'Cheetal'. We say this ourselves in a spirit of humble objectivity and introspection. In fact, we also confess that we owe some of the best contributions to a small number of members, many of whom are not even Indian. They have been some of the staunchest supporters of the Society, and it is to our contributors, too, that we owe a large proportion of the improvement in the 'Cheetal' over the last decade, and particularly in the last few years. We hope to continue this progress and take it several steps further as soon as resources make a quarterly publication on superior paper with colour-reproduction possible.

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Appeal for Membership:

By repeating it again, we might dull the edge of urgency, but by not reiterating that it is the duty of every member to enroll as many others as possible, we should feel delinquent in our duty.

And why not? We find we may become a bit of a nuisance, a wild life bore, like others are 'bridge' bores or 'fishing' or 'shooting' or (notwithstanding that our illustrious Founder-Editor was one) 'cricket' bores, but at least it is in a good cause. And the kind of individual who would go round the cocktail table or duck into a corridor or the men's room to dodge our importunate demand that he joins the Society, well, is he likely to be such a loss to our acquaintance? On the other hand, very often, we have made some excellent friends by introducing them to the Society or to the 'Cheetal'. All one has to do, in these days of a more attractive 'Cheetal', is to pass on a copy and on a rapid reading of it, one finds they are half-converted.

This lack of a proliferating membership used to exercise our Founder-Editor, too, we notice from earlier issues of the 'Cheetal', and despite all the progress made, we find we really have to rely on every member getting his share of new inductions. We do hope your response will be as helpful as in the past.

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Wild Life in the Doon:

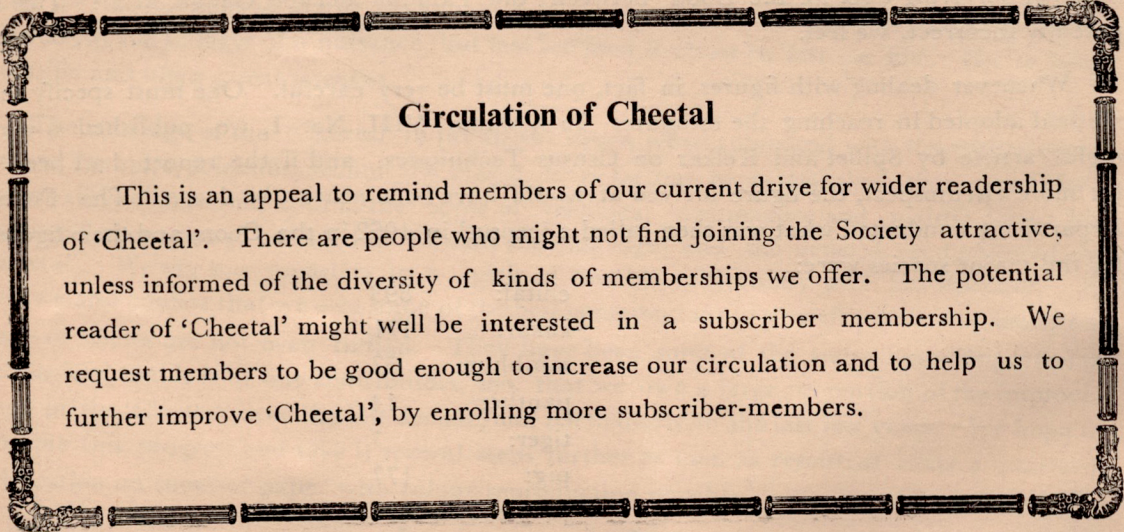
A recent news-item in the local Northern Post reported that an authority had put the figure of surviving tiger for the Doon between the Yamuna and the Ganga, at 3! This is patently incorrect, we feel.

Whenever dealing with figures, in fact, one must be very careful. One must specify the method adopted in reaching the estimate. In Volume VIII, No. I, we published a very useful article by Spillet and Kelkar on Census Techniques, and if the report had been a bit more circumspect, the figure arrived at would have been nearer the dozen. The Forest Department conducted what was then called a 'census' in 1962 in the Doon, and their figures for the major species were:

chital:	893
kakar:	171
sambhur:	57
panther:	14
tiger:	7
pig:	177
jungle fowl:	870
pea fowl:	80

For 1962, the Editor expressed his views, as 'impressions', and the 'census' was not much less 'impressionistic'. For 1967, we would say the old figures are nearer the fact. There were probably thirty tigers in the Doon in 1962, but not more than ten or a dozen now. These ten or a dozen range over restricted areas. From East to West, we know from our friends the wardens at Motichur and Koelpura that there are five to seven in that Sanctuary alone. Then, there are two or three in the Beribara rao who cross over the 'ghata' to the south of the Siwaliks in Ranipur Block. There is one pair in the Banbaha Block area near the Kansrao station. There is still one in Golatappar, and a pair we are very friendly with in a nala in Barkot. That makes 12 or 13, and we have not counted the famous 'Amsot' tiger of Ramgarh, the distant-ranging old 'goonda' tiger of Malhan, and several others who probably cross over to the Doon from across the Siwaliks in the hot months and return in the winter.

Over fifteen, at any rate, or say, over ten or a dozen. Not three, though it will not be long before even these ten or a dozen are reduced to three.



Circulation of Cheetal

This is an appeal to remind members of our current drive for wider readership of 'Cheetal'. There are people who might not find joining the Society attractive, unless informed of the diversity of kinds of memberships we offer. The potential reader of 'Cheetal' might well be interested in a subscriber membership. We request members to be good enough to increase our circulation and to help us to further improve 'Cheetal', by enrolling more subscriber-members.

Editorial Notes

Princely privileges and patronage:

Mr. Foot, a pioneer educationalist in India, said that one of the things a 'public school' education in India needed to instil into its privileged students was that the country expected it of them that they would set the pace in 'good works'. In fact, this devotion to good causes, many of them 'lost' causes, has always been the hallmark of the 'public school' boy, though, not of all privileged classes.

That princely orders in India, scions of wealthy or noble families, have lived up to this tradition, if not as faithfully or universally as we would have wished, is a fact borne out by the way they have come forth to found and then to help nurture the Wild Life Society. 'Shikar' and the hunting of animals and birds in the right way are one of the noblest traditions of Indian nobility, and we would not be here to-day if these recipients of the privy purse had not been good patrons. They have offered of their largesse to the Cause of Conservation like the good students of Mr. Foot.

The political implications or rights and wrongs of the controversy are very complex, and do not fall within the purview of the Society, but we here would like to express our gratitude for, and make some acknowledgement of, the constructive uses to which many of the recipients of privy purses have put their resources, in the field of conservation. In a field where the State is just beginning to realise and face its full responsibilities, and where the role of private enthusiasts and individuals will remain for long an imperative, the princely privileges have played a very useful part, and wild life will in many ways be the worse off for the discontinuation of these. There may be other aspects to this, as there indeed are, in that shooting privileges as well as the ability to shoot on a grand scale will also disappear, but would it not be worse to see *only* fortunate, (and very welcome, of course!) tourists enjoy such well-organised and often very sporting 'shikar'?

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Farm-protection and wild life:

Crop-protection guns licences have often been our target of attack because of the widespread abuses to which they are prone. We still feel strongly that a goodly ninety per cent of these guns are misused for 'poaching' game within the protection of the law. And yet, when we hear that farmers on the outskirts of sanctuaries have resorted to poisoning rhinoceros, as has recently been reported from Darrang in the Orang Sanctuary, and also rumour-

ed, though not confirmed, from Kaziranga, we cannot help but feel that some method must be devised to save the farms surrounding sanctuaries from the depredations of wild animals. Such incidents give wild life a bad name and often unjustly justify authority in pronouncing extreme sanctions against them. We feel there should be a system of compensation rather than revenge, to console farmers for their destroyed crops.

The same sort of compensatory system should be adopted for cases like the recent one near Sassan Gir. Here, a pride of lions pulled down a strong, healthy plow-bull belonging to a villager. The incensed villager, quite understandably, if not legally justifiably, poisoned the carcass of the bullock, and the entire pride of ten lions, which included some females and young, was wiped out overnight. Evidently, lions are easier to kill by poisoning than tiger or panther are. We still recall Jim Corbett's efforts to bring the man-eating leopard of Rudraprayag to book by this method. He failed. So do many of the Madhya Pradesh poachers who these days try to poison tiger-kills with a view to an easy bag and a quick and profitable sale of the trophy skin for export. Some do succeed in this nefarious ruse, but not many. The lion, however, appears to be vulnerable, and we can only think of a fair system of compensation for cattle killed as the way of preventing villagers from exacting their own brand of revenge.

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A Delhi Zoo Fortnight:

We have often wanted to see a really good zoo well-run. It took decades to get one such, and some while longer to see it being run well. Under Mr. Bachketi, of the U.P. cadre of the Forest Service, and now under Mr. Sankhala, the current director from the Rajasthan cadre, the zoological park at Delhi is flourishing and establishing fine precedents for the rest of the country, and for zoos all over the world.

Finding ourselves with a week or two to spare in Delhi, we rather got into the pleasant habit of dropping in at the zoo of an evening with our cameras and lenses. One fine afternoon, with the shade temperature in the hundred's, we battled with the wits of Jamuna, the zoo's amiable clouded leopardess, trying to get her to pose for us on one particular branch of a dead tree. We exposed a whole roll of film with an assortment of lenses, without getting the elusive jade to give us the right stance, but were amply rewarded a little later at being informed of the litter of five to the zoo's prized tigress Radha. The litter was initially of three, but two more arrived after a lapse of half-an-hour, two white and three normal-coloured cubs. Though Dr. George Schaller's figures for the average litter for tiger are 3.5 with only one or two eventual survivors in the wild state, the Delhi zoo makes

elaborate arrangements and we hope that the four now surviving will grow up successfully. Rani, another white tigress is expecting a litter in mid-August and we wish her luck.

We then strolled over to the tiger-enclosure and had a pleasant hour with another set of five normal cubs. Playful as kittens or puppies, they are a pleasure to soothe the nerves of the worst case of urban psychosis. We learned with regret of the death of a gibbon purchased from Assam, as also of the death of an otter who was very popular with visitors. Another 'first' that the Delhi zoo has gained this summer is the successful breeding of pheasants' and chukor chicks. The zoo authorities allowed the grasses to grow within the pheasant enclosures with the result that the birds laid eggs generously, and hatched them with little or no goading. We agree completely with the Delhi zoo's policy of merely helping nature along, of giving an occasional nudge, but not using strong-arm ambitious methods. Often and often, these produce the best results.

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Guindy:

One of our active members informs us that the wild life park at Guindy in Madras State harbours some one thousand animals, of which over seven hundred must be blackbuck. This loveliest of all antelopes, and fast diminishing in numbers in its native habitat in India, is the subject of a research project under the sponsorship of the Society. Our correspondent further informs us that part of the 700 acres belonging to the Guindy park have been taken up by an Industrial Estate, and another few hundred acres are being demanded for a golf course now. We wish to go on record with our emphatic objections to this un-democratic idea. The privileged lovers of the game of golf can afford to travel a few miles extra by car, but not so the animals or the enthusiasts who now visit the park in large numbers.

We would welcome more information, possibly with photographs, on the Guindy wild life park.

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Then and Now:

Speaking of His Highness Maharaja of Nepal's shoot to Chitawan in 1933, E.A. Smythies of the Indian Forest Service states: "CHITAWAN! the famous big game reserve of Nepal, and one of the most beautiful places in the world,synonymous with the acme of big-game shooting.

During the trip there were very few blank days...

January 7: A tigress was shot in a ring.

January 9: A ringed tiger was shot in mid-air.

January 10: A red-letter day; four tigers killed in two rings.

January 11: Another red-letter day: 4 tigers out of five were killed in three rings.

January 12 and 13: Five tigers, all shootable, were shot on the 12th. This (fantastic) number was exceeded on the 13th., with six tigers killed. This makes the phenomenal bag of 19 tigers in four consecutive days.

It is proof alike of the phenomenal number of tigers in the Rapti valley, and of the superb organisation and shikar arrangements under General Kaiser and of the deadly accuracy of the Maharaja's shooting. With a similar organisation and similar accurate shooting, it might be possible to equal this bag in the famous game sanctuary of the United Provinces, The Hailey (now Corbett) National Park, but nowhere else. Incidentally, the Hailey Park, in scenery, climate, and forests, is like Chitawan in miniature, which suggests that these 'duns', inside the Outer Siwaliks, are where tiger reach their optimum. Dehra Dun must have been another such tiger paradise before man turned "a smiling savannah into a howling wilderness"

Only thirty-five years ago. We leave it to the reader to extrapolate the graph he finds applicable to his area, another thirty-five years into the future !!

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Lakhs of Schemes:

Every so often we come across a news item like the one we here print verbatim:

Hazaribagh, June 29.—The Hazaribagh National Park will be made more attractive with the addition of a deer park in a fenced area, by providing muffled lights and constructing more tourist cottages with modern amenities including telephones.

Elsewhere, we publish an account of relief works for wild life undertaken in the Palamau Division by certain Calcutta commercial executives and forest officials of Bihar. This report, describing emergency measures for this year's draught, underscores the need for preventive measures for the future to avert draughts hitting the wild life so hard. Minor dams and irrigation projects are peculiarly adapted to Bihar hill-conditions, and realistic priorities must be established. We do not profess to understand Bihar's needs better than honourable ministers or officials, who are experts or knowledgeable amateurs in their fields, far better than we, but as a general principle, we do feel strongly against all large high-expense schemes of a largely theoretical and often visionary nature. We do not agree with the expenditure of two or three lakhs on the Hazaribagh National Park for muffled lights or telephones or Tourist Huts to instal them in, nor even of keeping rare fauna in enclosures. The main

purpose of a National Park is to show to every visitor the characteristic wild species of the area, and to this all else must be subordinated. First, let us ensure that visitors can see tiger and sambhur, pig and chital and sloth bear, in the Hazaribagh Park, then spend more money on amenities. What is the use of these luxuries and 'amenities', when even the commoner species are neither abundant nor well-trained enough, to be shown to visitors. The reports we have from visitors to the Hazaribagh Park all speak highly of the senior officials of Bihar Forest Service, but all speak negatively of the view-able wild life.

Similar considerations are applicable to places like the Rajaji Sanctuary, and others of the ilk, where massive concrete watch-towers, with beautifully painted sign-boards, guide the visitor to view-less nights atop these monstrous prominent landmarks no modest animal would ever approach !

Even poachers do better than this: in parts of Uttar Pradesh and M.P., where we often visit, they deposit bags of salt, to make artificial salt-licks, they cut grass along paths and otherwise prepare the ground they intend to shoot by day or by night. Surely, it is not too much to expect from our traditionally sporting foresters that they can be more imaginative in building more camouflaged towers, covering them with growth of creepers when built, and establishing artificial salt-licks, preventing disturbances, even changing current tracks or removing disturbances around such watch-towers or 'machans'. We are very glad to note the new interest being taken in Bihar by the new Government, and offer our whole-hearted co-operation, and we hope that our views will be taken in the spirit of genuine and sincere helpfulness in a common cause in which they are being offered.

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Wild Life Clubs at Schools and Similar Institutions:

Some time ago we were asked by a Government department to furnish information on clubs and societies at Indian schools, and to suggest model constitutions. Elsewhere, we publish an account of the Wild Life Society of the Doon School, all the members of which are either student, or educational members of the Society. In fact, the Doon School has so far played a very active part in the Society's activities, the Founder-Editor of 'Cheetal', Sri R.L. Holdsworth, was a highly respected master at the Doon, and your current editor is also a master there. There are 140-odd members of the Society from the Doon School, a substantial number when the total membership is considered. Because of this large membership, it was decided at the last meeting of the General Body that the Secretary of the Doon School Wild Life Society would have ex-officio membership of the Executive Committee, so that he could bring forward proposals and problems from students.

All this, we hope, shows our decided support to the idea of wild life clubs at schools all over India. And yet, are there any? When your editor toured Indian schools in 1964 and 1965 and lectured at them, and enrolled many score members, several of them started such clubs, but our investigations have proved that most have become defunct or forgotten now, so soon after. Evidently, what is needed is at least one master at each school who is genuinely interested himself. That is why we have often stressed that it is the schoolmaster who can start the chain-reaction which will proliferate our membership.

But the fact remains that very few such men can be found within schools. And even so, only English-medium schools would probably opt for this, and that, too, only the more affluent privately-run schools. Which is no kind of representation of India's school-going children. At this stage, we feel, this idea may not work, but are giving this further consideration.

We would, of course, be glad to hear from schoolmasters themselves if they are interested. We promise them full support by way of books, films, and other help in organising such clubs and societies, as is described in the following pages.

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Pavo cristatus and Gallus murchi:

Some of our staunchest supporters, and keen legitimate 'shikaris', a quite prevalent combination, have been trying to persuade us to investigate whether the peafowl genuinely damages the growth of jungle fowl populations. We know that they compete for roughly the same food, even though their sizes are disparate, frequent the same range, and are limited by the same predators. Till recently, this has led to a balanced population, with one or the other predominating over certain chosen ranges.

With the declaration of the peafowl as the National Bird, this balance was upset, and its population, vis-a-vis the jungle fowl population, at least in the three forest divisions with which we were familiar; it would not be enough merely to bring this imbalance to light, we felt, and after talking with the authorities, it was agreed that the only circumstances under which control of peafowl populations might be permitted, were the actual proving of the opinion that peafowl eat the eggs of jungle fowl. Such proof of such a concrete circumstance would help to restore the balance of nature, between these two species and their environment.

This was our intention, and our plan was to examine the stomach contents of specimens of peafowl collected from the Shiwalik and Dehra Dun divisions, to demonstrate the presence of albumin, etc., which might be identified, we felt, as being that from the eggs of jungle fowl.

For a variety of reasons, this approach has failed miserably. We were not permitted to shoot peafowl, particularly during the breeding season, of course. So we had to confine ourselves to the two that were brought to us by some non-Indian friends from Madhya Pradesh. And this, evidently, was inadequate. What was more, we were told quite categorically by zoologists that egg-albumin and other traceable matter would be transformed beyond recognition within an hour in the stomach of a bird.

This seemed to settle this, in spite of the encouraging support for the venture from K S. Dharmakumarsinhji, who offered to help.

This leaves us with the vain hope of being able to catch a peafowl 'in the act'.....an unlikely possibility, considering that no one seems to have succeeded in the last few hundred years of recorded hunting ..chances now are much less, now that peafowl *are* protected and all shooting so much reduced in scope.

We would welcome any new ideas on how to go about this problem, and are approaching other experts to guide us, for here is evidently a problem in technique.

The Late Colonel Jim Corbett

One of our members is working on a definitive biography of the late Jim Corbett, and we would be grateful for information about the great sportsman and writer. Letters from him, his trophies, copies of his articles, or of the journal on wild life which he edited in the 'thirties, are all welcome, and any other contributions by way of reminiscences of people who knew him would help the compilation of a better biography.

Concerning the Great Indian One-Horned Rhinoceros

By

J. JUAN SPILLETT

Historically the range of the Great Indian One-horned Rhinoceros extended along the base of the Himalayas from Assam to central Uttar Pradesh. Included in this range were northern Bengal, Bihar, and south-central Nepal. Today the Indian rhino is restricted to a number of locations along the Brahmaputra or its tributaries in Assam and northern West Bengal and the Rapti River Valley in Nepal.

An ecological survey to determine the status of the Indian rhino in its present range was conducted between January 21 and June 25, 1966. This survey was officially sponsored by the World Wildlife Fund, Morges, Switzerland and was also assisted by The Johns Hopkins University Center for Medical Research and Training, Calcutta-Baltimore, Maryland (U.S.A.). The co-operation and assistance of the Forest Departments in these areas was particularly important and made it possible to accurately assess the status of this valuable wild life species.* The number of rhino in each of these areas, as determined by this survey, was reported by Mr. E.P. Gee in the October issue of "Cheetal". In some cases it was found that the number of rhino exceeded previous estimates.

The approximately 160-square-mile Kaziranga Wild Life Sanctuary in Assam was censused on March 18 and 19, 1966. As a result, it was determined that over 400 rhino inhabit this outstanding sanctuary. This is over half of the Great Indian One-horned Rhinoceros in existence. Concern has been expressed that the monsoonal floods, which annually inundate most of the sanctuary, pose a threat to the rhino and that Kaziranga is similar to "keeping all of one's eggs (rhino) in one basket". Thus, two major proposals have been presented. One, whereby a bund would be constructed along the north-eastern boundary of Kaziranga to prevent the Brahmaputra from flooding the sanctuary. Another, in which rhino from Kaziranga would be introduced or re-introduced into other parts of India. It is apparently felt that such measures would help to insure that the Indian rhino would be protected from threatened extinction.

*Special thanks go to Messrs. P. Barua (Chief Conservator of Forests), A.C. Gohain (State Wild Life Warden), H.K. Nath (Sibsagar Divisional Forest Officer), C.L. Chakravarty (Kaziranga Range Officer), and P.C. Gogoi (Nowgong Divisional Forest Officer) in Assam; Messrs. K. L. Lahiri (Chief Conservator of Forest), J. N. Bhadury (Cooch Behar Divisional Forest Officer) S.S. Sanyal (Assistant Cooch Behar Divisional Forest Officer) and N. P. Talukder (Jaldapara Range Officer) in West Bengal; Messrs. R.G.M. Willan (Chief Conservator of Forests) and Kirti M. Tamang (Forest Inventory Specialist) in Nepal. These men and their departments are to be commended for the work they have done in helping to preserve the Great Indian One-horned Rhinoceros as a part of their nations' wild life heritage. Mr. E. P. Gee, a noted authority on the Indian rhino and a member of the Indian Board for Wild Life, also made the necessary arrangements with the Central and State Governments, as well as the Forest Departments concerned.

I revisited Kaziranga from June 9 through 14 in order to observe both the sanctuary and its rhino under monsoonal conditions and thereby assess the situation. Several days were spent in a dug-out canoe and on elephant back inside the sanctuary during one of the peak floods of the season. Rhino were observed to graze contentedly in waters over 4 feet deep. They were also observed to swim considerable distances with apparent ease and appeared to go wherever they desired. In short, rather than being imperilled by the annual flooding, as surmised by some people, the rhino appeared to be little hindered or affected by the flood waters of the Brahmaputra.

Approximately 15 square miles have been eroded from the north-eastern boundary of Kaziranga by the Brahmaputra river. However, at the same time the river has deposited or built up rather extensive islands or "chapories" along the western end of the sanctuary. These should rightfully be considered a part of Kaziranga. Although the losses to erosion are a major problem, the other effects of the yearly floods have not posed a serious threat to Kaziranga's rhino. Actually, in-so-far as rhino are concerned the overall effects of flooding are probably beneficial.

Most of the streams and lakes or "bils" in Kaziranga have been invaded during recent years by water hyacinth (*Eichhorinia crassipes*). The use of herbicides or other means for removing this undesirable weed do not appear feasible. Burning the dried up plants in the ephemeral "bils" also appears to be of little, if any, value in checking reinfestation. Floods presently are the only means by which these areas are temporarily cleared. Without floods they would shortly become solid green masses of vegetation. Flooding also replenishes the water supply of the sanctuary's numerous "bils" and essentially irrigates the savannah-like grasslands. Optimum habitat for rhino is in reality maintained by the annual floods and without them Kaziranga would probably be unable to even maintain its present rhino population.

The Embankment and Drainage Department proposed the construction of a "bund" for flood control along the Brahmaputra in the north-eastern part of Kaziranga. Preliminary surveys for the construction of this "bund" were initiated in 1965, but were discontinued upon the insistence of the Forest Department. This issue is presently a controversy between the two departments. The aforementioned beneficial effects of flooding would be eliminated if such a "bund" were constructed. In addition, there would be the possibility that such a "bund" would be breached during peak floods. If this happened, the sudden rush or convergence of flood waters upon the sanctuary would undoubtedly result in devastating effects both on the animals and their habitat. Therefore, in my opinion the Forest Department was wise in taking the stand which it did. However, measures should be taken to check Kaziranga's losses to erosion. This would include the removal of domestic livestock grazing along the banks of the Brahmaputra inside the sanctuary. And extensive planting

of trees and shrubs in affected areas, as is being done in experimental plots by the Forest Department, would probably be of value in halting erosion.

The major threat to the Indian rhino is habitat destruction—both through overgrazing by domestic livestock and by human encroachment upon its few remaining haunts. Poaching is also a problem, but to a lesser extent in most rhino areas.

The presence of domestic livestock presents a triple threat to wild life when the two inhabit the same area. This is particularly true with rhino. First, there is direct competition for forage. The Indian rhino is a huge beast and requires large amounts of readily available forage. When an area is extensively grazed, the rhino may have to spend all of their time and energy just to acquire their basic food requirements. These basic requirements may not even be met if the area is overgrazed, as is all too often the case where domestic livestock is present in India. This was dramatically demonstrated by the results of the Kaziranga wild life census. Compartment four in the Kaziranga Block was formerly noted as one of the sanctuary's outstanding rhino areas. However, due to political expediency, domestic livestock grazing was initiated in part of this 5 square mile compartment in 1950. As a result, only 8 rhino were reported during the census for the entire compartment. Further, not a single rhino was observed in the 2 square mile area within the compartment which was grazed by domestic livestock.

Second, the presence of domestic livestock presents the possibility of introducing diseases and parasites, which may prove fatal to wild life populations. Occasionally rhino are found in Kaziranga which have died of unknown causes. The horns of two such animals were recovered during the 1966 census. It might be that these animals have died from diseases or parasites introduced by domestic livestock. There is also the possibility that the sanctuary's wild buffalo population is presently being controlled by diseases and/or parasites.

Finally, livestock grazing results in disturbances to wild life both by the domestic animals and the inevitable presence of humans associated with them. The rhino is probably unique among mammals in its mating behaviour. The male, as well as the female, come into heat prior to mating. It seems extraordinary even for a male and female to come together when both are in the necessary physiological state. Even then, if they are continually disturbed, it is not likely that they will successfully mate. Twice, while observing the mating behaviour of rhino in the Jaldapara Wild Life Sanctuary and in spite of our precautions to remain inconspicuous, the rhino became aware of our presence and ceased their "love making".

Numerous related incidents of rhino wandering great distances through populated areas lead one to believe they were probably seeking a place of refuge from human disturbances, as well as perhaps a mate. Except when making forays upon crops, which usually takes

place at night, evidence indicates that most rhino tend to avoid areas inhabited by humans. Generally speaking, rhino do not thrive when in close association with man. Man's activities in the areas inhabited by him likewise result in the destruction or elimination of optimum habitat conditions for rhino. Thus, the preservation of the Indian rhino requires that certain areas be maintained as much as possible in their natural state.

Supposed aphrodisiac qualities of Indian rhino horn has resulted in extremely high prices for this commodity on the black market. This in turn has resulted in an enticement for unscrupulous people to enter into this illicit trade. There are reports of rhino horn, which is not true horn but cornified tissue much like a human's fingernails, selling for as much as Rs. 6,000 per kg. However, it appears that the extent of rhino poaching is exaggerated for most of the rhino sanctuaries in India. Nevertheless, the export of rhino horn should be strictly controlled. Also, a sustained effort should be exerted to protect the rhino wherever it is found. This can best be done with a well-trained and adequately paid staff, which has sufficient authority both to apprehend and to bring to justice those committing violations of this nature. Within this framework a system of rewards for those maintaining and sustaining the law, as well as an effective system of punishment for those violating it, is imperative.

One of the major deterrents to the introduction or re-introduction of the Indian rhino into other parts of India is the expense involved. This money could be much better utilized in the protection and preservation of the rhino in the areas which it presently inhabits. I too would advocate the re-introduction of the Indian rhino elsewhere *if* all of the rhino in India were restricted to the Kaziranga Wild Life Sanctuary. But this is not the case. The Forest Department of West Bengal has established Jaldapara as a notable rhino sanctuary. Laokhowa, Manas, and Orang in Assam also have sufficiently large numbers of rhino to comprise reproductive entities. With sufficient protection, as well as habitat restoration and maintenance measures in some cases, these could likewise become notable rhino sanctuaries.

The importance and value of the Great Indian One-horned Rhinoceros as a national asset is at present little realized. Thousands of people, both from India and abroad, would spend enormous sums of money for the experience of seeing the Indian rhino in its natural habitat. However, before the rhino can fulfil its potential as an important tourist attraction and a major source of revenue, the basic amenities for visitors, such as transportation, food, lodging and so forth, must first be provided. This entails the provision of suitable numbers of good quality accommodations within the vicinity of rhino sanctuaries. These also must be effectively advertized so that the potential visitor is aware of the available facilities and their cost. In addition, there is already a market for surplus rhino from these areas. Reputable zoos throughout the world will pay as much as Rs. 50,000 in foreign exchange for a single Indian rhino at its place of capture.

Mr. E.P. Gee ably presented reasons for not "transplanting" the rhino elsewhere in the October 1966 issue of "Cheetal". However, one important factor appears to have been overlooked thus far. There is not a single zoo in India with a breeding pair of Indian rhino. In fact, in-so-far as I am aware, none of the Indian zoos presently have a pair of Indian rhino. The Indian rhino has been successfully bred in a number of the European zoos. Why not in India? Or, why don't at least some of the Indian zoos have a pair of one of the most remarkable mammals in the world—the Indian rhino? For those who advocate the introduction or re-introduction of the Indian rhino into other areas in India, I would suggest that their money and efforts be expended in protecting the rhino in its present range and also in providing additional rhino for the reputable zoos of this country. The possibilities of rhino successfully reproducing in a zoo would be better than if a few individuals were introduced into an extensive area where they may never come in contact. At the same time they could be seen and appreciated by far greater numbers of people.

The Society Library

In the past few years, the society library has been much improved, and is proving popular with members. To further improve it, we request members to donate old books which are now out-of-print or other books which may help us to serve the members better with a fuller library. All donations of books are acknowledged by the Honorary Secretary.

A Profile of Kaziranga

By

HAMDI BEY

Kaziranga's face, like any other, has two sides—the one at which the conservationists toil and the other which visitors enjoy.

Dr. Juan Spillett (a contributor to this journal) who conducted last year's census thinks "as far as wild life is concerned, Kaziranga is about the only bright spot that I have encountered in all of India". In a letter to me he observed that the census had found "about half again as many rhino than many had estimated, and that the place was loaded with elephant and as a whole almost all the wild life populations appeared to be in very good shape".

None has come back from Kaziranga disappointed though the usual tourist itinerary gives the sanctuary very little time. Most visitors come by air to Jorhat and then travel down NH 37 by taxi, just 55 miles, spend the night at the Kohora tourist lodge, go on elephant back for 2½ hours into the sanctuary, and then motor back to Jorhat to take a plane away from it all. Still the tally is always impressive—several rhino, swamp deer, hog deer, buffalo, pig, sometimes elephant—all seen in a few hours on the edges of the sanctuary.

Very few visitors spend two nights and explore the more distant bheels; fewer still watch pelicans nesting and rarely does a visitor take an elephant for a whole day to track down the big elephant herd or a boat to travel down the Brahmaputra and see darters standing in rows on the banks for long stretches.

Actually most visitors spend less time in the sanctuary than they do on a visit to a big zoo. Yet some of them have reported having seen tigers, monitor lizards and a python catch a teal. The rainy months, when the sanctuary is in flood, are becoming increasingly popular with visitors who want to see wild life without much trouble for then the animals are around the tourist lodges.

Apart from the facility and certainty with which wild life is seen at Kaziranga is the fact of its accessibility, and these two bring to it over 5,500 visitors each year of whom 500 are from other countries.

The main tourist lodges, those at Kohora, are beautifully sited, up on a hill with a rocky stream coursing by, and overlooking a tea-garden and the sanctuary. A 15-minute drive along a motorable kutchra road takes one to the Mihimukh watch-tower where some animals are to be seen every day and at any time of the day. Beyond the watch-tower the road

goes to the Arimora lodge within the sanctuary, and on the way one sees rhino definitely; buffalo and swamp deer generally and elephant occasionally. Six miles from Kohora along the National Highway is the Baguri lodge, whose backyard is part of the sanctuary, and whence the more exciting beels are reached as well as the tree-top house. Since there is no motorable road to the tree-top house it is not as popular with visitors as the watch-tower.

The existing accommodation at the two Kohora tourist lodges can take in 3,000 more visitors each year, while there is room for overflows at Baguri and Arimora and at the closeby inspection bungalows of Amguri, Kaziranga and Bokakhat. The grounds at Kohora have been steadily improved and are both pleasant and restful. Nice walks can be taken to tribal villages behind the lodges particularly to a huge boulder which has been shaped into the likeness of an elephant by unknown tribal artists. The significance of the sculpture is not known.

The Kohora lodges have electricity and soon will be having airconditioned rooms, running hot water and water-coolers. They have modern bathrooms with tubs and showers. There is a planter's club 15 miles away where visitors can play tennis or golf, have a beer and chat with locals. A petrol pump is under installation just below the tourist lodges.

Most of these amenities have grown because of the wild animals of the sanctuary, and so we must now turn to the stock there. A detailed list of the animals and birds will take a lot of space and probably it will suffice here to say that last year there were 366 rhino, 150 elephant, 101 swamp deer, about 100 buffalo and thousands of hog deer and pig. The population of day feeders is large and that is why visitors see so many animals.

The natural history of Kaziranga has not yet been worked out in detail. The sanctuary is a gift of three rivers—more so of the Difloo and the Dhansiri than of the Brahmaputra into which they fall. Old and abandoned courses of these rivers lie all over the 166 square miles of the sanctuary, and are recognizable by the beels which still retain water because of the annual inundation. The tributaries brought rich loams, free from lime but acidic in reaction (the pH value being between 5.2 and 5.5) to a valley to which the Brahmaputra had given only neutral soil.

Less than 200 feet above mean sea level and lying south of 27 degrees N Latitude the temperature rarely falls below 40 degrees F. Frost is unknown and even in June and July, when it is hottest, the shade temperature never goes up beyond 90 degrees F. Though the monsoon extends from May to September there are sharp but brief showers from March onwards. Rain totals 83 inches and rain days total 119 in the year.

The climate and soil were ideal for a tropical forest but the sanctuary is a grassland interspersed with marshes. The rivers and their changing courses retarded tree growth initially, and away from the swampy areas are the strips of mounds built by earthworms on

which alone trees grow. These narrow woodlands are damp and moist, nurturing cane brakes, and among these the pelicans nest and the sambar have their clean herd-floors as though swept by brooms.

Elsewhere grasses and weeds inhibit tree-growth for the trees, siris and simul, are light foliaged and leafless during spring. The grasses and weeds are prone to fire, and each year they are set on fire purposely to keep the sanctuary open enough for rhino to live.

The water spreads of the beels are often covered by water hyacinth which the larger animals eat to a limited extent, but their main food is alongside the marshes where the doloni creeper, the ikra and nal reeds, and the doob grass grow. Rhino, elephant, and buffalo prefer the doloni, ikra and nal but the deer are partial to doob. There is much thatch and other rough grasses eaten by all and frequented by florican, partridge and kaleej. The beels are fishful and support the pelicans, storks, cranes, egrets and darters.

When notification 37-F of January 3, 1908, constituting Kaziranga was issued only a dozen rhino had been left after much shooting there for half a century. Supposing half of that initial stock were males there should have been six Founding Fathers of the sanctuary. Three of them have been identified: Boora Goonda, Kankatta and the one who died this year after a week's refuge (from younger bulls) in the Vesalimara fringing, too soon to earn a nickname.

The main problem in conservation has been poaching because of the high price rhino horn fetches, over Rs. 7,000 per kg. The sanctuary has 77 miles of boundaries of which 36 are along rivers. The next threat is from infection from cattle which graze around the sanctuary and in areas within it. In 1950 mass inoculation of the livestock of the surrounding villages was carried out by volunteers. The time is ripe for a second drive in that direction. Erosion and flooding during the monsoon drive the animals into the hills where they are not protected. The mithun population has declined to such a low figure that mithun (gaur) have not been seen for years because of these migrations. The sanctuary needs addition of some hill areas to it and a wider buffer zone to the south.

After being merely a Reserve (one is not sure if during those years there were not blocks for shooting animals other than rhino) for 18 years, Kaziranga became a sanctuary in 1926. The animal population rapidly expanded after that but efforts to constitute it into a National Park have not yet borne fruit. Incidentally the Wild Life Board, which normally chooses a sanctuary for its meetings, has not since its inception in 1952 held a meeting at Kaziranga or in Assam.

So far conservation at Kaziranga has been a job of policing the sanctuary against poachers, and that has been successfully done to give a net annual increase in rhino population over the last 60 years of six. This rate of increase has not yet been correlated to the annual

mortality (both natural and artificial) recorded at the Range Office, and so the birth rate is not known either. But we know that the gestation period among rhino is prolonged, 16 months, and that mating is rather fortuitous because both male and female must come in heat at the same time. The female periodicity is fairly regular 46 to 48 days, but males at zoos have been known to be unresponsive unless fed with special hormones in their diet.

The sex ratio among the rhino of Kaziranga has not yet been ascertained. It is difficult to tell a male from a female rhino though some of the staff at Kaziranga maintain that shapes of the respective necks differ, especially in thickness. Others think the female horn is smaller. Dr. George Schaller had suggested that the outline of horns picked up from dead animals, whose sex can be definitely known, should be traced on paper and possibly after a hundred horns had been so studied it would be possible to identify the sex of free and live rhino by the look of their horns. This scientific work, which is in addition to the strenuous policing against poachers, can only be done if special funds and staff are made available.

Report on Drought Relief Work in the Palamau Forests of Bihar

By
ANNE WRIGHT

We have been visiting the beautiful jungles of Palamau for the last fifteen years on shooting holidays but our interest in the shooting part of these holidays waned as we became interested in the preservation of the wild life, fast disappearing from this lovely region.

For two consecutive years the monsoon rains have failed in the area with the resultant loss of crops— a grim tragedy for the villagers who now face starvation, and to add to the distress the water level in all Bihar had gone down. On a visit in January of this year it was already clear that the shortage of water due to the unprecedented drought was going to affect the wild animals very seriously. I wrote to the World Wild Life Fund who replied that they had not at that time any arrangements for the disposal of emergency funds, and that a grant would take time, which of course we could not afford. They however very kindly circulated the letter and the International Society for the Protection of Animals wrote to say that a sum of £500 was being donated by the R.S.P.C.A. to the Animal Welfare Board, Madras. This



The D.F.O., Mr. Shahi, Chief Conservator of Forests and Mrs. Wright looking at a dry water hole and typical poacher's hide.



Prithveesh Varma filling water troughs in a parched jungle—Temperature 116°

(Photographs sent by courtesy of Mrs. Wright)



A Bull Bison drinking at a waterhole in Betla senses we are nearby.

(Photograph sent by courtesy of Mrs. Wright)

sum however was placed at the disposal of the Bihar S.P.C.A. for the feeding of ponies and donkeys. The Central Government, with the help of much foreign aid were rushing food to the State, while UNICEF had flown in Halco Diamond drilling rigs and were with other organisations boring holes, and installing pumps in the villages. Nothing however was being done for the unprotected wild life and no aid was forthcoming to help the Forest Department with their huge task. Further appeals to the R.S.P.C.A. and I.S.P.A. were made, and a further most generous donation of £500, specifically to be used for the wild life of Palamau, was made by the R.S.P.C.A.

Meantime, with the aid of a sum of money kindly sent by the Animal Welfare Board, Madras, and other emergency donations, my husband and I with some volunteers were able to start proceedings. We were allocated three jungle blocks in the drought area in which to operate, with a forest bungalow as a base. Mr. S.P. Shahi, Chief Conservator of Forests, very kindly visited us there and I accompanied him on tours to other areas in an effort to awaken forest officials at all levels to the seriousness of the drought, and to see what water holes had been provided for animals. The heat ranging to 116° Fahrenheit was unbearable on these tours by jeep and car as we drove through hundreds of miles of parched dry jungle, from the forests of Chatra Division near Gaya to Ranka and Bistrampur on the Sarguja border. Every river was dry, and nullahs which contain natural pools in normal years had dried up, some for the first time in living memory. The only oasis being the sanctuary at Betla, where the Forest Department had installed water troughs which were filled daily by a jeep water tank. The wild elephants had left the sanctuary in search of water in March, but herds of gaur, cheetal, sambhar, wild boar, and many barking deer could be seen congregated at these water holes in the mornings and evenings. I saw bison calves, and spotted deer fawns amongst these herds and walked to within a few yards of a bull bison on a moonlight night and heard the rasping rutting call of the cheetal stag.

Our operations in the drought area centred around our base camp, and after surveying the two hundred square miles area we were horrified by the water situation. Our principal concern was to establish a main source of water supply since there were no UNICEF pumps within fifty miles and village wells which had not dried up contained only a few inches of water. Water was found by digging deeply in the Auranga river, and N.K. Chaudhuri supervised the making of a 12 ft. × 12 ft. tank, and installed a hand pump and pipes to enable drums to be filled. Whenever it was possible we dug in the nullahs to reach water, but when, as was generally the case, no water was found we installed 45 gallon drums cut lengthwise to form tin troughs which we filled daily by jeep trailer. We installed these troughs at the foot of the Ranidarh hills, along the Sarju Nullah, at Charpa nullah, Lowagara, Ambatika and Damas Dag. It was gratifying to find they were used immediately

by small herds of cheetal, barking deer, peafowl, and red jungle fowl. Panther pugmarks, bison, wild boar, porcupine and monkey marks were also found. In the hot hours of the day a myriad of small birds—Drongos, Paradise and white Browed fantail flycatchers, White-eyes, the spotted and rufous Doves, Redvented and Whitewiskered Bulbuls, Pittas, Orioles and Bee-eaters, to name only a few, collected around the troughs. At one trough a barking deer seemed to take up her permanent abode, while near our waterhole in the Auranga there were pugmarks of three tigers in the sand. Tribal people out in the forest picking biri leaves to sell, and roots and berries to eat, drank water in the day time from these troughs, while cattle often drained them dry.

My husband's firm, Andrew Yule & Company, financed a separate scheme to aid the villagers, and he and volunteer executives from their Calcutta office aided by Dr. D.N. Biswas supervised daily deliveries of water to sixteen villages where the inhabitants and their cattle were entirely without water. During the most critical period of six weeks, jeeps and trailers hauled thousands of gallons of water over rough jungle tracks to these remote villages.

All shooting had been banned during the drought but this had no effect on the local poacher. We were astounded by the scale on which they operated. "The local poacher is the principal cause for the disappearance of game in India" wrote the Hon. James Best, ex-Conservator of Forests in his book published over thirty years ago. This applies now more than ever as guns licensed to protect crops are used continuously for killing deer and gaur over water holes in the Summer, and at salt licks in the rains. The meat is auctioned and sold to lorry drivers and forest contractors who in turn profit by selling to restaurants on the Grand Trunk Road and in towns. At every water hole we found hides made of branches and in certain places hides of a more permanent nature built of boulders and stones with loop holes to fire out of had been carefully erected. Shots were often heard at night, but in spite of efforts by N.K. Chaudhuri, P. Verma and myself to creep up to the water holes and wait in likely places, we were unsuccessful in catching these cunning poachers. Our activities were not without their comic side such as the time we ourselves were surprised at close quarters by the sudden hysterical alarm call of a barking deer who had mistaken Prithush Varma in the dark for the white tiger of Rewa, and on another occasion when a panther's sawing call seemed only a few yards away.

We destroyed twenty-three hides and one machan but these were invariably rebuilt and we learnt that with the Monsoon rains the poachers concentrate on shooting at the Salt licks. A Government official from the nearest town was caught shooting a sambhar by spotlight from a jeep and is being prosecuted while the area Commander has been informed about army vehicles whose numbers were taken by Foresters at night.

The donation from the R.S.P.C.A. is to be utilised for the building of two model dams with the hope that in the future similar dams may be constructed in other areas to bring permanent relief to wild life in the parched summer months, and to ensure that this year's calamity can never occur again. The Forest Department will provide forest guards to protect wild life from poachers at these two watering places. Two civil engineers including Mr. P.K. Das joined our camp to make estimates and study the sites and work is to commence as soon as possible. Difficulties arise for volunteers who are to supervise due to lack of transport, but we hope that some donations may come in to enable the Save the Wild Life Fund to buy a jeep.

Bihar is lucky in having Mr. S.P. Shahi, a very knowledgeable and keen wild life conservationist as its chief conservator, and there is no doubt that the position of wild life will improve under his guidance. There are already signs of this improvement as the game laws are more strictly adhered to in a movement to save the disappearing wild life of Bihar.

The Future of the Tiger

Two hundred years ago the tiger population of India must have been very great and high in proportion to the human population, kept at a low level by starvation, epidemics of diseases, child mortality and a generally low expectation of life from other contributory causes. At the same time the jungles were vast and game plentiful. But Pax Britannica, with its stoppage of local wars, its enforcement of the penal code for crimes against life, and the introduction of peaceful conditions in which settled agriculture gradually developed, brought about a change in the picture. The population began to increase and inevitably there arose a clash between the tiger and man.

In his rapid and indiscriminate clearing of the jungle for cultivation man came up against the game species as well as their predators, and although his weapons were primitive (he had not yet acquired firearms in any quantity, which were indeed denied to him until India gained her independence in 1947) he yet had the power to maim and injure, if he could not always kill. The combined result was a gradual increase in the number of man eaters. Cattle killing tigers on the other hand, did not have to take recourse to this alibi of injury for it was a habit that developed naturally, as game became scarce with the clearance of its habitat and cattle became more with an increasing population.

A hundred years ago the situation seemed to have been really bad, and many parts of the country were feeling the pressure; villages were being deserted and the jungle was reclaiming cultivation. One alleged reason for the creation of man eaters in the past, which can no longer remain valid even if there were any substance to it because the basis is no longer there, was the abundance of human corpses during the time of epidemics and famines. Hindus burn their dead but in the past there were apparently occasions, during great famines and epidemics of killing diseases like cholera, when the number of corpses completely outstripped the ability and resources of the people in regard to cremation. Bodies were then left unburied, with at most the placing of a live coal in the mouth—symbolic of cremation. To what extent this practice encouraged man eating among tigers it is of course impossible to say. The early British sportsmen with their matchlocks, then muzzle loaders, and finally breach loading smooth bores were poor killers when compared to the efficiently armed tiger hunter of today, and must have left many a wounded animal. It was the introduction of more efficient firearms, particularly the rifled barrel, and later the smokeless powder, which brought about a change. Although hardly anyone but Europeans could bear arms, the large increase in their numbers and particularly of the army after the 1857 'sepoys mutiny', meant a much greater volume of fire power being brought to bear upon the tiger population. By that time also the pursuit of big game and the hunting of the tiger in particular had assumed the nature of a cult with the Empire builders, and the slaughter of the tiger—as well as the lion—was on. The turn of the tide for the tiger commenced from then.

Perry, who claims that man eaters have been terrorising Indian villages for four centuries, has also estimated that in the last century in India more than a hundred thousand tigers were killed; yet he wonders why the mortality from man eaters did not show an appreciable decline until the period after the war—presumably the first world war—in spite of the increase in human population and the decrease in tigers. He quotes figures in support: in the 1860's the mortality was 1300 to 2000 victims annually, in the 1930's 1000 to 1600.

I think I can offer an explanation for the decline in the post war years, and that is the much greater efficiency in killing methods brought about by the use of the electric torch as an adjunct of the rifle. In the olden days tiger shooting was an uncertain business, and if tigers were fired at during the hours of darkness the odds were that they were wounded rather than killed (which meant more potential man eaters, incidentally); but after the introduction of the handy and efficient dry cell, electric torch which can be fitted to a rifle or shot gun, tiger shooting was made much easier. It is only in one State in India—the U.P., Corbett's country—that there has been for long a provision against shooting tigers after sunset, which fact has to some extent countered the destructive power of the electric torchlight for shooting tiger, and elsewhere this unsporting, but to some extent unavoidable, method prevails.

Perry was also puzzled regarding the static position in *man eaters* up to the end of the war in spite of the large number of tigers shot. It must be borne in mind that man eating is not prevalent throughout India and is confined mainly to certain localities, where it is generally of a long standing nature. While more tigers were being shot in the country it did not follow that more man eaters were also being shot. The shooting of a normal tiger is an easy affair compared to the killing of a man eater, and all the advantages of darkness are in favour of the man eater so long as you do not have an efficient killing technique—and that came with the electric torch.

I would add a footnote to this discussion on the incidence of man eating by tigers in the past by pointing out what appears to be an alarming increase of the scourge in areas where it has been prevalent for long, together with an extension to hitherto uncontaminated regions. During the last few years the problem of the man eater of the Sunderbans, for centuries the classical example of this macabre man-animal relationship, has assumed vexing proportions. Many persons seem convinced that the incidence of deaths from tigers in the vast stretch of tidal backwaters and waterways constituting the combined delta of the Ganges and Brahmaputra river systems has sharply increased, although the authorities tended to deny it. The victims have traditionally been fuel wood cutters and honey gatherers, that both avocations conducted under the supervision of the forest department of Bengal, and by the very nature of their tasks the persons engaged in them cannot be completely protected, from surprise attack.

There is no means of knowing, unless a detailed ecological survey is made, whether the increase in the numbers of man killing tigers in the Sunderbans is a *real* increase or only an *apparent* one. The latter could well be the case and may be due to the greater numbers of people being exposed as the result of the increased exploitation that forms part of the expanding activities of a planned development, such as India is going through, or to depletion in the natural food of the tiger (which in this case is the *chital* or spotted deer) compelling it to turn to man. In any case both these reasons would imply that the tiger population may have been subsisting on 'half rations' all this while (normally a tiger requires to kill once every three or four days but this period could be stretched out to a week). Only one thing seems certain and that is there has been a great increase in recent years of the number of guns and the activities of meat hunters has forced the tigers to take to man eating. It is also suggested in this connection that the increase in the number of inexperienced hunters among this army of gun owners has brought about a concomitant increase in the number of man eaters, on the logical presumption of many of them wounding rather than killing tigers outright.

The same grounds are offered as explanation of the position in Orissa, which has in the past few years come into the news with reports of large numbers of people being killed

by man eaters. Recently there was an appeal from a missionary in the Bastar area, home of the war like Maria Gonds—the one people who might be expected to be able to look after themselves against tigers, incidentally—for help in getting rid of man eaters in a particular area. In this case it is the tribals themselves who have been responsible for the creation of a situation in which they are being attacked by tigers, for they have decimated the game by unrestricted hunting. These central Indian tribes, once masters of vast forests which are now reserved and where they lived mainly by hunting are denied the right to hunt in them except for a symbolic, ritual battue held once a year, in which they kill everything they come across. But their hunting instincts are so deep rooted and their society is so untrammelled with taboos as regards killing of animals, that they have virtually cleared their jungles of game. Is there any wonder that the tigers have turned on them?

Corbett's country—the Naini Tal district, gateway of Kumaon and part of the belt of the Himalaya from the Ganges to the borders of Nepal in which his hunts for man eaters took place—is periodically in the news and the scourge has certainly not ended there.

But in addition to these chronic 'sore spots' alarming reports of tigers killing human beings are occasionally received from various parts of the country. Only the most serious find their way into the newspapers, however, and it is impossible to gather the whole picture. Nor is it possible to gather statistics from the central Government in Delhi, of the numbers killed in the whole of India, as there is no arrangement for the collection of such data from States. Wild life, like forests and agriculture, is a transferred subject and no longer the direct responsibility of the centre, and the type of information which was once available, and on which Perry apparently based his figures, is therefore not readily available. Once upon a time rewards were offered for the destruction of tigers in India—as was done for elephants in those parts of the country where they were a hindrance to the extension of tea or coffee planting—but those times are gone. Nowadays the authorities proceed on an *ad hoc* basis, and whenever the pressure becomes so serious as to defy the usual processes of proclamation and rewards for destruction of offending animals they turn out the armed police. The result is often the wiping out of innocent tigers along with the guilty!

The person who thinks seriously over all this has to admit of a feeling of frustration over this business of man eaters. In the first place the lack of a scientific approach to the question, and the failure to scrutinise and sift the explanations offered for the increase of 'bad' tigers in the country, is disappointing. Admittedly there are a number of variables in the problem but there seems little to be said for lack of attention to it. As a piece of applied research into an interesting aspect of animal ecology, the study of the man-tiger-game species relationship would be well worth the while. There is great urgency of ascertaining the true facts and actual position before applying long term remedial measures in the interests of man, the tiger, and its animal victims.

There are good grounds for believing that the boldness acquired in the practice of cattle lifting leads to man *killing* and then man *eating*. Many a man killer has attacked its first victim, and probably more unintentionally than otherwise, when being obstructed in its attempts to secure a meal for itself from a herd of cattle. From killing to eating is but a step. While this may account for some of the cases of completely healthy tigers which have taken to man eating, the other type of such cases being the cubs of man eating tigresses which have acquired the taste from their mothers (although there has been doubt cast on this belief by no less a person than Corbett) all the records go to indicate that it is injuries which are at the bottom of man eating as such.

Corbett maintained that "cubs of man eaters do not become man eaters simply because they have eaten human flesh when young". This view is the more extraordinary because every other writer has expressed, perhaps without sufficient justification, opinions which are to the contrary. I have no means of knowing why Corbett believed this—if he has discussed it in any of his books I have missed it. Did it stem from his generally big hearted, and slightly romantically coloured, opinion of the tiger in general? Of course it is an accepted belief that man eating tigers do not subsist exclusively on a diet of human beings, and that they are capable of—in fact may be habituated to—killing and eating game animals and cattle, and Corbett may have had this fact in mind. It is interesting that Kenneth Anderson, whom I have heard described as the 'Jim Corbett of the south', avers that man eating tigers are permanent addicts, unlike man eating leopards which will lay off man killing for long periods. Incidentally, Anderson states that man eating tigers are more common occurrences than man eating leopards, for the simple reason that the latter have always a wide choice of prey.

In coming to any such conclusions the difficulties of arriving at fair estimations of probability must be sufficiently allowed for by the persons concerned. Corbett's conclusion in regard to the fatal liking for human flesh not being necessarily transmitted to the offspring of a man eating mother seems to be at complete variance with what would be a normal biological phenomenon. It is true there have been one or two rare cases in India where carnivores like the lion and the tiger have subsisted in captivity on non-animal food, but the natural food preferences of a species which is exclusively a meat eater cannot be denied and it is almost unreasonable to conclude that a tiger cub's acquired tastes are not persistent enough to follow it into adulthood, especially when they fall in line with its instinctive need of animal flesh.

Of all the 'natural' injuries that can lead to such incapacity as to cause a tiger to take to the killing and eating of human beings, the damage from porcupine quills appears to be most common. In most cases the injuries are in the paws and lower limbs, and could be sufficiently serious as to affect its pulling down of natural prey and killing of cattle.

Whatever the natural causes responsible for man eaters being produced, they are likely to be outweighed by the artificial reasons of injuries inflicted by human beings, and prime among these is that of wounds from gun and rifle. Here at least the facts are incontrovertible and there is no room for the weightage of personal subjectivity. Some wounds may enrage to the point of the animal wanting to take revenge: the wounded tiger's whole reputation for ambushing its assailant is there to support this. Although a wound may not be crippling enough to prevent it from killing its natural food, a tiger may go on being a man eater once it is launched on such a career. In fact it is these lightly wounded tigers which, on recovery, give no convincing reasons as to why they become man eaters and provide the puzzling features of certain cases. But generally the evidence is glaringly clear and leads one always to fulminate against the persons responsible for the initial 'crime' against the tiger, which sometimes seems to be greater than the guilt it later accumulates against itself!

The tiger that has become a man eater—or even a cattle killer—has no future. The hand of every man is against it and sooner or later it falls victim to a bullet. To that extent, therefore, there is a grave threat to the tiger in India today, wherever there is this clash between it and the human population. This is the case in all the peripheral forest areas so far as cattle lifting is concerned, for there are always large numbers of cattle living outside the reserved and protected forests of the country but grazing inside them. The 'right of pursuit' into a Government forest is granted only in the U.P. to an aggrieved cattle owner, who may sit up for the marauder. This, to some, is almost a quixotic gesture in the light of the prohibition on the shooting of tigers later than forty-five minutes after sunset. Many sportsmen in the U.P. have the grouse that after they have made an elaborate and expensive *bundabust* and are sitting up expecting the tiger to come out any moment, the authorities pull them down from the *machan* in the enforcement of the no-shooting-after-dark rule; at the same time a person from the neighbouring village, on the plea that his cow was killed by a tiger (and which was illegally grazing in the forest anyway) is permitted to take his revenge without paying for the right to shoot in the reserved forest according to the rules.

It was reported some time ago that tigers in Mysore and Madras were being poisoned with the pesticides being supplied to cultivators, and that their skins were finding their way to the workshops of the local taxidermists. In a furrier's shop window in a hotel not a quarter of a mile from where I live I recently came across a magnificent tiger skin for sale. Through curiosity I enquired the price and was startled to find that a trophy which would have cost Rs. 300/- twenty years ago is now selling for ten times that price! The proprietor of the shop calmly told me that he was getting the skins from south India and that he had sold four pieces already for that price. How can the tiger of India stand up against such pressure for its pelt?

Twenty years ago Jim Corbett expressed an opinion to Lord Wavell, the then Viceroy of India, that the tiger would be wiped out in ten years. He was laughed to scorn by complacent persons in authority, and even those who knew Corbett thought he was exaggerating. But are his prognostications coming true perhaps? Large areas of the best tiger habitat have been cleared at the foot of the Naini Tal Himalaya, within fifty miles of Corbett's home, for mechanised farms and with the grass and trees have gone the game, as well as the tigers that preyed on it. The same is the story elsewhere. Forests which were the private shooting grounds of the Maharajah of Mysore, once a very keen hunter of tigers and elephants, have been closed to shooting because of the alarming decrease in the tiger population since their transfer to the Government forest department.

In India the sole hope for the tiger lies in the retention of large blocks of forests of sufficient extent and backed by hilly ranges, as is the case in the greater part of the sub-Himalaya and in central India, where it can range freely and have sufficient game to prey upon. The latter is the crux of the problem, for a forest is of no use without the game animals suitable for the tiger's diet. And so we come to the question of general protection of wild life and of game animals in particular. Unfortunately here also the position is not very satisfactory, as indicated earlier, and if the tiger is to survive—not in a few isolated, small sanctuaries but in forests which were once its home—much more will have to be done. Destructive practices such as shooting game from jeeps and cars, both by day and night, sale of game meat and above all, excessive and illegal shooting in Government forests, must be stopped.

Fortunately the Indian tiger is not exposed to any great extent to the depleting effects of superstitious fancy in regard to the supposed value of its various parts, as is the case among the Malaya and Chinese races where this cult of the tiger may be said to be highly developed. There is a panacea for almost every ill to be made up from some part or the other of the tiger. The flesh is a remedy for debility, pills made from the eye balls will cure convulsions and blindness, the skin either burned or roasted and mixed with water is a general cure for illness, the sexual parts are believed to have aphrodisiacal properties and, with the Chinese particularly, the bones chiefly those of the head, are greatly prized as containing a soul substance or vital fluid akin to that of man. The Indian faith in the value of the tiger's fat as a cure for rheumatism and the use of the clavicle or 'lucky' bone, whiskers and claws as ornaments and charms, is shared by these races. In India it is a common occurrence for a sportsman to lose some of the whiskers and claws of the tiger he has just shot to eager snatchers of these much prized articles among the crowd which always gathers on such occasions. To what extent these beliefs are influencing the survival rate of the tiger is a matter for consideration. An ominous pointer to the future is the persistent drain on the world's rhinoceros population for its horn, valued by the Chinese as a

highly effective aphrodisiac. On this analogy alone there seems no future for the tiger in south east Asia.

As a minor solatium we have the general respect, tinged with awe, in which the tiger is held in India and countries nearby among certain classes of people at any rate. Some of the forest dwelling tribes of central India will not refer directly to the tiger by name but will use an indirect honorific, such as the 'Great One'. The Dattia tribe of the north eastern Himalaya consider they are the kinsmen of the tiger and call it 'brother.' The superstitions associated with the beliefs that men can turn themselves into tigers and vice versa are less common to India than to Malaya and the countries beyond. This mystique of the tiger is more prevalent among the common people than the more sophisticated classes and to that extent its protective value is less, but it nevertheless counts in the overall approach to the tiger. Unfortunately it is not the *common* man alone who holds the key to the future of the tiger in his hand!

The tiger today is India's most valuable attraction to a certain class of foreign tourist, and in its way is fit to be ranked with the Taj Mahal as a foreign exchange earner. The growth of *safari* organisations eager to cater for the visiting sportsman has been a feature of the post-independence period, and a tiger shoot arranged by them comes under the category of a luxury trade. Even the indigenous sportsman finds it an expensive proposition to arrange a shooting camp.

Provided this sphere of activity which has the tiger as its objective can be properly controlled and all the unhealthy possibilities associated with it eliminated, it can do a lot for the future of the tiger. Something in demand would normally be considered as something worth conserving and multiplying but unfortunately, as in the case of so many other things, the demand is increasing at such a pace that there are grave fears of the supply becoming exhausted. Certain steps, such as a ban on the shooting of tigresses and tightening of the rules governing collection and export of tiger skins, will help. A raw tiger skin fetches more than £ 100 at pre-devaluation rates and the demand abroad for skins of this animal—as well as of leopards—is tremendous. It is only by these means and by strictly protecting wild life and 'rationing' the stock of tigers will we be able to ensure that the tiger will be with us in any appreciable numbers fifty years hence.

Statistics are tricky things to play with but I cannot help quoting some figures. In 1877 according to Burton, a total of 1579 tigers were shot in British India. No one knows how many more were shot in the native States. Going back fifty years earlier, during a period of eight years between 1820 and 1828, an average of 138 tigers were shot annually in Bombay Presidency alone. A little more than a hundred years later, in the twenty

years spanning World War II, from 1934 to 1954, (according to Chaturvedi) an average of 280 tigers were shot annually in all of the seven major tiger bearing States of India together. Whichever way we look at these figures one cannot help asking the question "Quo Vadis *Panthera tigris*?"

P.D. Stracey

The Future of Wild Life in India

The animals of India are of 2 categories. The forest dwellers, and those who inhabit the plains, and their future depends on the progress of the human race both aesthetically and materially. One cannot expect a hungry people to feel protective to a form of life which grazes their crops, and can provide meat for sale or consumption, in the interests of posterity. I therefore, assert that the problem of vanishing wild life is too urgent to hope that an enlightened public opinion can ever rally in support of this fast dwindling asset. It is only legislation and enforcement that can call a halt to the rapid decline of game animals, and successful wild life management which can make wild life an economic asset to the country. The awareness of Wild Life is growing in the world, and television in England has at least 2 weekly programmes devoted to animal subjects. Whereas the *safari* is restricted to a few trigger-happy millionaires, wild life pictures are viewed by millions and definitely belong to the future when with the improvement of photographic equipment, better pictures will be shown to the generations, whereas the anachronism of the hunter can only continue evolution through the refinement of his firearms, and his atavistic instinct find fulfilment by pulling the trigger. Of course if wild life vanishes, the above sentiments are purely academic.

The population explosion is bound to effect the wild life of this country, and when every inch of available land is needed to feed a hungry people it is a foregone conclusion that the creatures of the wide open spaces will be driven to the edge of the forest, and beyond, with the advance of cultivation. From there it is only the species that can adapt themselves to a changed environment can hope to survive. The Blackbuck is a species which is doomed and soon will not be seen outside the zoo. The Chinkara faces a similar fate. The Nilgai, largest of our antelopes, with a campaign against its survival, has its back to the wall, and the cheetah has vanished. It is fortunate that forests are essential to our economy for purposes of timber supply, moisture precipitation and soil erosion, so that the land hungry masses cannot destroy this habitat, though here again our percentage of forest area is far less than it should be.

India is at the stage when every governmental act must have a rupee value. The politician is interested in his vote-catching schemes of public welfare, and the bureaucrats endeavour to please their masters by budgetary cuts on "non-essentials", and measures to swell the revenue coffers. In the present setup, therefore, the conservation of wild life must be linked to a material aspect before any positive interest is taken by government. Aesthetic value, like non-alignment, is only on paper. And ranged against the concept of wild life preservation, are the vested interests of shikar, and the immense timber revenues which preclude the creation of any natural sanctuary. Wild Life is just one of those emergent clichés to which lip service is paid as a world movement, but for which most of us in India can see no justification.

The country to which we must perforce look for guidance on matters pertaining to wild life is Africa. Their evolutionary processes have passed through the period of massive slaughtering, of the fabulous ivory hunters, and the trigger happy adventurers. Their *safari* white hunters are also game wardens, and a large percentage of tourists merely have photographic ambitions. National Parks and Sanctuaries are well organised, have their own management and protective staff, and yield large tourist revenues. The Serengeti Game Sanctuary of about 8000 sq. miles has over a million head of game. The Kruger National Park of similar area, has over 300 miles of metalled roads and residential accommodation. Compared to this our premier National Park is of 185 sq. miles and one sanctuary is of 4 sq. miles (sic). Protagonists of the African wild life scene and advocates of the 'laissez faire' of drift, maintain that the tourist-attraction of vast and variegated herds of game on the African veldt cannot be matched in India. This may be true for most of what Africa has to offer is in the shop window, whereas our forests shroud the majority of our animals, but the appeal need not only be in multitudes. A herd of 200 chital in an open forest of mixed teak and shisham led by the master stag with his spreading antlers and proud bearing can be spiritually more edifying than an undulating mass of zebra and wildebeest on an arid and sunscored plain.

India has also not lacked in numbers. The prewar herds of swamp-deer were numbered in thousands and have given way to the advance of a land invasion which has slaughtered them and destroyed their habitat. Chital herds of 200-300 were once common. Blackbuck were numbered in thousands, and the diminutive chinkara congregated in large numbers. All these have been wiped out within the century until only a fragment is left, and the question now is can these herds be rehabilitated to a semblance of the numbers visible at the turn of the century. I am of the opinion that it still can be done if a realistic view is taken of wild life preservation. The wild life organisation must consist of dedicated persons untrammelled by nagging budgetary cuts and unnecessary red tape.

The disappearance of game animals is due to two main causes, their physical destruction by shooting, netting or other means, and disturbance and destruction of their habitat and breed-

ing grounds, of which the main cause is the cattle 'menace', for it is nothing less. They not only take possession of grazing grounds, but also transmit the diseases to which these ill-nourished animals are prone. Moreover, grasses are burnt by graziers from February onwards in order to induce new green shoots, which cause casualties among newly born fawns of Chital and 'Para'. The main impact, however, apart from the transmission of disease, is the disturbance which inhibits normal gestation and encourages miscarriages through constant movement, as the deer tribe are essentially static creatures, and in favourable and undisturbed conditions tend to remain in a restricted area.

The area to which this article bears special reference is in the Dudwa block of the North Kheri Forest Division, and I have confined my activities to an area of about 2 sq. miles. The land consists mainly of local forest grasses and is bounded on the North by the perennial Neora river which has a belt of miscellaneous trees, notably jamun on the south bank and mainly sal forest on the north. I have ploughed and harrowed 3 areas of land of about 5 acres each at suitable high localities which are not subject to heavy flooding. Cultivation inhibits tall grasses and serves as viewing ground, and later on may even be planted with perennial grasses (fodder).

I have constructed artificial saltlicks in these ploughed up spaces. These licks consists of a mixture of common salt and earth built into a cone which soon acquires the consistency of sunbaked clay. These saltlicks are frequented in large numbers by swamp deer, chital and hog-deer, (and on one occasion a bear who thought he had located a termite nest) especially during the dry season. I start burning the grasses in January, though this season I intend starting soon after the rains by first cutting the grass by hand and allowing it to dry before firing it, which should induce an earlier outcrop of green shoots. I finish burning by the end of February thus allowing the heavier outcrops in low lying areas to stand and serve as fawning areas. Cattle have now, with the co-operation of the forest department and in spite of the local politician, been excluded from the area. Timber operations are in cyclic abeyance, and I am hoping that Government will accept my suggestion that the felling of jamun, especially in sanctuary areas, should be prohibited, so conditions are as undisturbed as can reasonably be expected.

In this small area there were 5 years ago a herd of 60-80 swamp deer. There are now in my estimation over a thousand, chital always prolific and hardy breeders, are in considerable numbers, and hog-deer normally seen singly or in pairs, can be seen 20 at a time from one of the study-machans. The reproduction ratios in all these three species are favourable. For purposes of optimum reproduction animals require suitable forage, undisturbed conditions for breeding, and protection at all times, and such conditions can only obtain in parks and sanctuaries, and it should be the aim of Government who must bear the burden of wild life preservation that cattle are totally excluded from the areas, timber operations are kept to a minimum,

and protection from firearms is absolute. In such case there is no reason why wild species which are essentially of the plains and open forest cannot be viewed and photographed in very large numbers by the construction of a suitable network of roads, and the siting of machans at the saltlicks, which are largely frequented by the deer tribe, during the night in the winter. And throughout the day during the warmer months. This mainly applies to the swamp deer who may be seen, seated or standing under shady trees in the ploughed areas until the outbreak of the rains. Chital and hog-deer seek the shade of the forest during the hot hours of the summer, but otherwise associate freely with their larger brethren. A moving vehicle can approach these animals to within 10-30 yards, and though they are inclined to be more wary of humans, they can, depending on the closeness of the nearby cover, be approached within reasonable distance of a long lens.

If such a metamorphosis can come about in a period of 3-5 years in an area of 2 sq. miles, it can also with proper management, come about over larger areas. Tourist traffic can replace the hunting privileges of a few, and television programmes can replace the paltry and bloodstained dollars which shikar companies flourish for the benefit of our needy land. Mounted tiger skins fetch 5,000 dollars in foreign exchange, but what party-government can bring back from limbo this magnificent animal. Already the final curtain has descended on many a wild life scene, and while lone voices cry in the wilderness, our politicians squabble over the spoils of power, and voice platitudes regarding the welfare state in which our voteless wild life will have no part.

—Kr. Arjan Singh



Mixed Swampdeer and Chital in ploughed area.



Chital and Swampdeer at Saltlick.

Photos: K. Arjan Singh



Chital and Swampdeer

Photo : Kr. Arjan Singh

Angling Notes

By

R.D. SINGH

The Sex Life of the European sea-bass may not sound like one of the more pressing pre-occupations of the Irish Government, but recent research into it by a Government sponsored team is likely to bring considerable benefit to Eire's economy.

Bass, the big handsome sea-perch, resembles the salmon and are passed off as such many times, by unsuspecting seaside visitors. For sport fishermen, however, bass have been high in the hierarchy of salt-water game-fish.

Not much is known about their life-cycle, since bass are not an important food species, (if they were, there would almost certainly have been a fully-plotted life history established before the end of the 19th century, as in the case of cod, plaice and herring).

Bass have now assumed special economic importance. *Tourism* is Ireland's biggest foreign-currency earner, and an important attraction is the quality of the sport fishing the country offers. More than 125,000 foreign anglers fished in Ireland last year, earning the nation £ 5 million.

Bass fishing has therefore become in the blunt, un-Waltonian words of the Fisheries Trust—a resource to be exploited. Exploited, of course, in the best sense of the word, which implies sensible conservation of the resource in question.

“If you fish ‘whitling’ it’s like mowing grass”, says Dr. Michael Kennedy, who heads the Fisheries Trust. Whitling a huge highly fecund population, can be cropped again and again with no damage done. “But sweeping an area clean of bass”, he says, “is like felling an oak forest”. Bass grow very slowly indeed. They may not be sexually mature until five years old. And a 5 lb. fish may take 15 years to reach that weight.

The Trust is concerned to establish the time, place and spawning and investigate the apparently slow growth-rate. It also wants to know the extent to which bass population is localised—if they are, then commercial fishing in those areas could seriously impair sport and tourism.

A large scale bass-tagging operation has been launched by the Trust, which is already involving some of its employees in a task that will make them the envy of thousands of sea-anglers. This is to be paid to spend time fishing with rod and line in most prolific bass areas—the Atlantic surf beaches. The bass they catch will be returned alive, each bearing

a small plastic tag. Subsequent recapture by less-privileged anglers will be rewarded by a 5s bounty if the tag is returned to the Trust with details of weight and dimensions.

The programme will last two years. If, at the end evidence confirms the picture of a slow-growing, long-lived species in localised inshore populations then there will be ammunition for those who would like to see a ban placed on the public sale of bass. If it is so then it would be a better bargain for Ireland to sell her bass to tourist-anglers than to commercial netlers, who send them to French gourmets.

The plight of the mahseer in Dehra Dun waters is much the same. Through press and articles in 'Cheetal' it has been pointed out that the large-scale netting in Panchayat-waters every year has been denting the mahseer population considerably. Little is known of the life-cycle of the mahseer as no complete scientific study has been undertaken of it. It is probable that it, too, is a slow-growing, sexuality late-maturing fish. The only evidence is that fewer 'monsters' are being caught in these same waters, despite more intensive angling by sportsmen.

There is no organisation like the Fishing Trust of Ireland which is concerned about sensible conservation, and scientific study of the mahseer. The government is not adequately alarmed about the 'teak forests' of the waters being destroyed annually by commercial netting.

While coming back from Srinagar by car two years ago I happened to get stranded with an Assistant Director of Tourism, Government of India, in a landslide. In conversation he promised to look into the question of developing the prospects of mahseer fishing for tourists in Dehra Dun. Nothing has come of it. To discerning sportsmen, the ecstasies of mahseer fishing are well known; it is high time our Tourist Department became aware of it. When it does, it could get all mahseer waters in Northern India nationalized and handed over to a 'Fisheries Trust' which would then conserve and develop angling as a sport for tourists. Bringing in much desired foreign exchange and in doing so, conserve mahseer in these waters.

*Explanatory note on 3 terms:

Whitling—a kind of trout, probably a young bull trout.

Cod —food fish of northern seas.

Plaice —a yellow-spotted flat fish of the family (Pleuronectes Platesse) (food-fish).

Studies on Biology and Ecology of Common Rock Lizard (*Agama tuberculata* Gray) (Reptile: Agamidae) in the Doon

BY

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SUMMARY

Studies on biology and ecology of *Agama tuberculata* Gray (Reptile: Agamidae) were made during the period from years 1962 to 1965. Much observations could not be made in the year 1962 as it took time in standardizing the methods. Studies were mostly made in village Sahasdhara, located approximately 13 kms north east of Dehra Dun. The paper deals with the observations on ecology and biology of *Agama tuberculata* Gray; the species is widely distributed in Himalayan ranges but in Siwaliks it has irregular distribution. Besides these, observations on behavioural aspects, habit, habitat; colour changes; number of individuals in an abode; hibernation; sloughing; some observations on community density; sex ratio; food and feeding habits; biological association; predator; breeding and behaviour; breeding period; size of testes and eggs in oviducts; and number of eggs laid, have been made.

Introduction

General and short review of earlier works

Studies on biology and ecology of agamids of North Western India have so far not been done in any species of Genus *Agama*. Even taxonomic works on herpetofauna of North Western India also are very few, except for the commendable works of Boüenger (1890) and of M.A. Smith in Fauna of British India series, Rept. & Amph., Vols. I, II and III. These two works, too, don't give much information on ecology of North Western agamids. Works of Annandale (1907); Parshad (1914) (=Dr. Bains Prasad) and Acharji & Kripalani (1952) exclusively deal with fauna of specific areas. Annandale (1907) dealt with Mussoorie and Nepalese fauna in North Western Himalayas. While the works of Anderson (1872); Blanford (1875 & 1878); Hora (1923) and Inghly and Procter (1923) either deal with fauna of extreme North or have dealt in parts only. In contrast to the works on North Western India, we find that works on fauna of North Eastern Himalayas (Nepal also) is better known, viz., works of Boüenger, Annandale and Wall (1907); Gray (1853); Günther (1860); Houston *et al.* (1955); Levitan *et al.* (1956), Swan and Levitan (1962); Pulunia (1951); Smith (1952); Smith and

Battersby (1953).....Thus we find from this survey of literature that our information on systematics, ecology and biology of herpetofauna of North Western India is quite incomplete.

In an attempt to contribute something and to start with the subject, studies on herpetofauna of Dehra Dun district only, were taken up.*

Biology and ecology of European and African species of Genus *Agama* has already been worked out in *A. agama* by Harris (1957); Chapman and Chapman (1962); Marshall and Hook (1960) and in *A. ruderata* and in *A. agilis* by Abel (1952). In *A. tuberculata* Gray some observations have been made by Annandale (1907); Dodsworth (1913); Smith (1935); Acharji and Kripalani (1952).

The studies on *Agama tuberculata* Gray presented herewith, were undertaken during the years 1962 to 1965. Sahasdhara hills were chosen as main field study area because of easy accessibility to the site in all the seasons. The species is quite common in Dehra Dun district in Himalayan ranges and is locally known as "Chabra", popular english name assigned by Dodsworth (1913) is Common Rock lizard.

Material and Method

Village Sahasdhara (under Mussoorie Forest Range of Yamuna Forest Division) situated approximately 7 kilometres north east of Dehra Dun was chosen as main field study area for the reasons of easy accessibility and as the area presents maximum varieties of ecological niches. Regular field collections (diurnal only) and field observations were made during the years 1963-1965. Some of the recent reptile collection methods, viz., Conants, R. (1951); Fitch, H.S. (1951) and Neill, W. J. (1) (1956) were tried but shooting by ordinary air gun of 0.177 bore was found most suitable. Collections of gravid females were made by a cotton cord loop fixed on a bamboo stick and by big forceps. For spotting the lizards in the crevices and holes, sunlight was flashed by the reflection or by flash of ordinary looking glass. This simply helped to light the dark crevices and holes—the abodes of the lizards. The flash of mirror doesn't seem to have any marked stunning effect on the lizard.

Total numbers of specimens collected from various localities are given in Table No. 1 and the total number of the specimens collected from Sahasdhara are given under sex ratios in Table No. 2.

* So the commonest local agamid *Agama tuberculata* Gray was chosen for studies on biology and ecology (studies presented herewith); work on lizard and ophidian fauna of the district was also done, which will soon be published elsewhere.

Table No. 1

Showing number of individuals collected from localities in Dehra Dun district

North	East	West	South
1. Chakrata Alt. 2187.24 5m; 2f & 2 Ju.	1. Maldevta Alt. — 40m; 5f & 10 Ju.	1. Kalsi Alt. 477.93 2m; 3f & 1 Ju.	1. Lalpul area in Rajaji Sanctuary (District Saharanpur) Alt. approx. 600 5m & 2f
2. Sahiya Alt. 1092.71 2 m	2. Raipur Alt. 651.35 10m; 6f & 2 Ju.	2. Dakpatthar Alt. 304 1 Ju.	
3. Mussoorie Alt. 2112.87 10 m	3. Rishikesh Alt. 365.76 5m & 1 Ju.		
4. Rajpur Alt. 1037.54 5f			
5. Manjhera Alt. 1524 40m; 4f & 2 Ju.			
6. Sahasdhara Alt. 801 385m & 328f			

m : male; f : female; Ju : Juvenile

For gut content analysis the specimens were killed and guts were preserved in 10% Formaline. Measurements of whole specimens, testes and ovaries were taken in freshly killed specimens. Walk and spot theory and random sampling method was followed to attempt to study the probable community density index and the method of random sampling was followed in most of the studies in Sahasdhara area. This work (comm. density) could be done for six months only and was discontinued for studies on populations to be done later on. The studies of sex ratio are based on specimens collected from Sahasdhara only.

Distribution

Agama tuberculata Gray is widely distributed in both higher and lower Himalayan ranges of the district as well as in the neighbouring Siwaliks (Rajaji Sanctuary) ranges most of

which come in Saharanpur district. Specimens of the species have been collected from Chakrata, Sahiya in North Western region of the district; from Kalsi, Dakpathar in west, from Mussoorie, Jharipani, Rajpur in north; from Manjhera, Sahasdhara in north east; from Maldevta, Raipur, Rishikesh in east and in south of the district the specimens have been collected from 'Lalpuli' (Road bridge on Saharanpur Road) in Rajaji Sanctuary in Saharanpur district. In Table No. 1 above are given localities from where specimens of the species have been collected with altitude in metres above sea level; total number of males, females and juveniles. The localities are given under broad directional headings, viz., north, east, west and south. And clear directional discretion has not been done in placing the localities under headings for the sake of convenience. Abbreviation 'Ju' has been used to denote juvenile.

Table No. 2.

Showing number of male and female individuals found in single abodes in Sahasdhara area and in Lachman Chauki area during the year...

Month	Loc: Sahasdhara		Loc: Lachman Chauki		Remarks
	male Abode	female Abode	male Abode	female Abode	
1	2	3	4	5	6
Jan.	2/SA	1/SA	3/LA	3/LA	
Feb.	3/SB	2/SB	4/LB	1/LB	
Mar.	1/SC	X/SC	2/LC	1/LC	
Apr.	3/SD	3/SD	*	*	*No specimen found
May	6/SE	2/SE	*	*	"
June	3/SF	2/SF	2/LD	2/LD	
July	1/SG	X/SG		1/LE	
Aug.	3/SH	X/SH	...	2/LF	
Sept.	1/SI	X/SI	1/LG	...	
Oct.	1/SJ	X/SJ	1/LH	X/LH	
Nov.	3/SK	3/SK	2/LI	...	
Dec.	4/SL	4/SL	3/LJ	1/LJ	

Thus it appears that the distribution in Himalayan ranges is regular from north west to north east to south east from altitude 2,187 metres to altitude 600 metres above sea level. But the distribution in Siwaliks appears to be irregular.

Distribution range:—Smith (1935) has given the range as “the Western Himalayas from [Balti, Ladak and Tibet—Günther (1860)] Kashmir to Kathmandu district in Nepal; the Alpine Punjab, Afganistan (Kabul) [Quetta—Annandale (1907)] common in Simla [Mashobra, Tibet Road—Parshad (1914)]; Garhwal and Kumaon districts and about Murree in N.W. Punjab” while Acharji and Kripalani (1951) have recorded it from Kulu, Katrain, Kulu, Nagpur—Manali and have recorded *Agama argorensis* from the same eco. niche; Swan and Levitan (1962) have recorded from “Nepal, Central (Chattekhola, Rasua Garhi, Chitlong); Western (Jumla)”. Altitudinal distribution record of the species (given as *Barycephalus sykessi* †) has been given by Günther (1860) from 2,500' to 15,250' above sea level. Thus so far the species has not been recorded from the Siwaliks, the present record of the species from Rajaji Sanctuary, district Saharanpur appears to be the lowest altitudinal distribution range of the species.

Habit and Habitats

As the popular name rock lizard to the species (*Agama tuberculata* Gray) implies it is truly a rock lizard (Photograph No. 1) and lives in the rocky area (refer distribution Table No. 1). Dodsworth (1913) has given a very correct short description of habit and habitats of this species. His observations have been fully supported by Smith (1935) and Acharji and Kripalani (1952) have also significantly contributed on habit, habitat, biological association and other aspects of this species which they described along with the Herpeto fauna of Kangra and Kulu valley. My observations fully support the observations of Dodsworth (1913).

Observations presented herewith were taken in Himalayan ranges from Mussoorie down to Maldevta in north eastern Doon valley, but most of the conclusions drawn are from the regular observations of Sahasdhara hills. These are presented here in an attempt to contribute in detail about the habit and habitats of the species. Observations on food and feeding, sex ratios; courtship, breeding, etc., are presented under the respective headings.

Agama tuberculata Gray is absolutely diurnal [Dodsworth (1913) and Smith (1935)] and is quite docile during night as is other species *Agama agama* [Chapman and Chapman (1964)].

The species can be found in both the areas—areas near human habitations as well as in areas quite away from human habitation. In Mussoorie the species is quite common on

† *Barycephalus sykessii* has been synonymised by Smith (1935), Faun: Brit. India, Rept. & Amph., Vol. II, p.94.

Jharipani side and on 'Kaccha' road to Rajpur. On this road there is hardly any habitation after a short distance of one mile downwards. In Sahasdhara hills below Lachman Chauki, on stream bank side the lizard is quite common. In this area also there's hardly any human habitation. Thus it appears that lizard does not have any specific preference in choice of location of its abodes.

The lizard lives in holes on rocks (or boulders); crevices between rocks; gaps between bricks and stone blocks in buildings; slits between tin sheets used for roofing huts and houses. Similar observations have been made by Dodsworth (1913) on the abodes or the place of living of this species. In district Dehra Dun and in Sahasdhara area in particular, it has been observed that no abode is in ground level and is invariably two to three feet above ground level. Abodes chosen are sometimes straight and may be curved. Longest abode found was more than 400 cms long and 3 males and 3 females were the occupants (refer Table No. 2, readings of January in Sahasdhara). It has also been observed in Mussoorie, Jharipani, Rajpur, Manjhera, Sahasdhara, Maldevta, Raipur and also in Rajaji Sanctuary that the abodes are invariably found to be on slopes and mostly have one side facing the open ground from where the individuals peep during the cloudy weather and "even a passing cloud causes it to retrieve immediately"—Annandale (1907). It also appears that the lizard has a preference to ecological niche with a stream. Because in the areas of abundance—in Rajpur, Manjhera, Sahasdhara, Maldevta, Raipur and in Lalpull area (Rajaji Sanctuary) the species is found along the streams. This preference appears to be for the easy availability of insect food in moist shrubby area near the stream banks.

Individuals appear to have usual preference to sunlight and "few are occasionally to be seen basking in on bright days" (Photograph Nos. 1, 2 and 3) Dodsworth (1913) supported by Smith (1935). As seen in Table No. 4 in community density the appearance of individuals appears to correspond with the sunlight and it seems that the emergence of individuals out of their abodes is maximum during high temperature variation between 25°C to 28°C and bit higher, on bright days. Preference to sunlight and higher temperature is not seen in *A. rubrigularis* as has been observed by Ingoldby and Procter (1923).

In one instance only individuals were seen on any tree while feeding on flower petals. This behaviour appears quite different than other agamids, viz., *Calotes versicolor* Daudin [Smith (1935)] which can often be seen on trees. Individuals can be easily found "crawling about with great facility" [Dodsworth (1935)]. While running the tail is often held straight over the ground and the individuals run with agility, often the upper limbs are raised and the body is held up (above the ground) in typical Iguanid style.

Colour and Camouflage:—During normal activity the body colour remains dull grey black and offers nice camouflage to the individuals, with the background of nearly same color-

tion it's difficult to locate the individuals if their neck is not raised from the level (Photograph No. 3), which they often do. Smith (1935) describing the colour states "in life shoulders, breast and flanks have bright yellow or orange spots. In adult males the whole of the underparts become bluish black, brightest and tinged with purple on the throat, sides of the neck, shoulders and belly. And adult male is really a gorgeously coloured lizard (Stoliczka, 1872)".

Table No. 4.

Sample studies on Community density during June, 1963 to November, 1963

Month	Date	Random Sampl.		Walk and spot		Temperature		Weather (sky)
		No. collected	Density	No. seen	Density	Mini. temp.	Max. temp.	
1	2	3	4	5	6	7	8	9
June	5. 6.63	9	2.25	25	6.25	25 C	31 C	Clear
June	12. 6.63	4	1.00	15	3.75	23 C	26.5 C	Cloudy
July	18. 7.63	5	1.25	22	5.00	24 C	27 C	Slight rains
July	25. 7.63	6	1.50	24	6.00	25	28.5	Clear
Aug.	6. 8.63	5	1.25	20	5.00	25.5	26.5	Cloudy
Aug.	20. 8.63	10	2.50	26	6.50	26	27.5	Clear
Sept.	6. 9.63	4	1.00	10	2.50	24	27.5	Cloudy
Sept.	20. 9.63	6	1.50	8	2.00	23	26	Clear
Oct.	4.10.63	3	.750	7	1.75	23	24	Clear
Oct.	11.10.63	2	.500	10	2.50	22	24	Clear
Oct.	18.10.63	3	.750	5	1.25	23	24	Cloudy
Nov.	4.11.63	2	.750	6	1.50	23	25	Clear
Nov.	12.11.63	2	.750	5	1.25	?	?	Clear

In Doon Valley it has been observed that the gorgeous coloration of the adult males—the ultramarine blue tinge on neck, nape, upper sides of limbs, flanks and lateral side of

tail is not a constant coloration. This coloration is present during days when sunlight is bright otherwise and normally the coloration remains dull grey. This bright coloration of the individuals does not stay long in specimens preserved in spirit and formaline.

Number of individuals in an abode:—There does not appear to be any definite number of occupants of an abode. Dodsworth (1913) has also observed that the individuals may live as "singly or in pairs".

To ascertain the number of occupants in an abode observations were taken in Sahasdhara Hills. Two areas were chosen—one north of stream Balandi, termed here as Lachman Chauki area and the other south of Balandi stream—termed here as Sahasdhara. Observations were made in these two areas for 12 months in the year.

Number of individuals found in one abode in both the localities were noted as shown in column 2, 3 and 4, 5 of the Table No. 2. Abbreviation 'S' stands for Sahasdhara while 'L' is for Lachman Chauki, alphabets A to L have been used to denote serial numbers of abodes in localities S & L from which male and female individuals have been collected. Unsexed juveniles were not considered. Collection was not repeated in the areas.

Thus the tabulated observations can be simplified as in January $2/SA=2$ males and $1/SA=1$ female was found in an abode while $3/LA=3$ males and $3/LA=3$ females were found in an abode in Sahasdhara and Lachman Chauki respectively. From these observations it appears that the number of occupants in an abode is not fixed and there can be one occupant or there can be three or more occupants in an abode. Adult males found as sole occupants of the abodes were invariably full grown individuals. Maximum number of males found in any abode was six while maximum number of females found in any abode was four.

Predators

There are not much predators of Indian Agamids on record¹ (published) till today. But it appears that there one bound to be some predators which have so far been escaping the notice of the workers including the author. So observations on probable predators—of Agamids; *Varanus* sp; preying birds and mammals, were observed for four years in Sahasdhara hills during the routine vertebrate fauna survey of the area, but no predator of the species could be found. It is reported to me by Mr. S. M. Osman that hawks do predate on these lizards and he has observed it.

(Contd. to next issue)

1. There is no record of predator mentioned by M.A. Smith in Fauna Brit. India, Vol. III, 1935.

From The States

Uttar Pradesh

Steps are being taken to establish a Jim Corbett Memorial Museum at Kaladhungi in the old property of the late renowned sportsman, by the Forest Department. Information and trophies and other souvenirs for this are sorely needed, and will be gratefully acknowledged.

Jammu & Kashmir

The State Wild Life Board, under the chairmanship of Dr. Karan Singh, has adopted a resolution for the upgrading of the Dachigam Sanctuary into a National Park for the better preservation of *Cervus elaphus* hanglu, the Kashmir Stag. The proposal made by Mr. E.P. Gee includes the construction of an enclosure for the establishment of a herd for closer study.

Andhra Pradesh

Despite some efforts by the authorities, reports keep reaching us of unrestricted slaughter of bison and all other mammals in the Chintapali hills of this state. The 'kond' tribals have been suffering from food shortage, and have taken to living off wild life, without regard to rules or regulations. This bodes ill for the future of wild life.

Bengal

With floods further restricting the habitat of mammals and their predators, the tiger, there seems to have been a rash of human killings in parts of the Sunderbans, generally attributed hastily to confirmed man-eating tigers. Actually, a correspondent informs us that these are often accidents caused by chance encounters which become frequent because of the floods decreasing the habitat area.

Gujarat

Friends of the Society and of conservation have informed us that in the general area Pokran-Chandan, they have again observed pairs and parties of the Great Indian Bustard. This reiterates the observations of a group from the Central Arid Zone Research Institute, Jodhpur in 1962. We trust something will be done to save these from "shikaris" and that is why we are not detailing the location.

Maharashtra

A black-sheened panther, not entirely black, but melanistic enough to conceal the spots except in angular light, was shot by a shikar-party in the forests of Southern

Maharashtra last winter. This appears to be the first such case so far north, but we would be glad of confirmation from readers.

Madhya Pradesh

The drought and the famine-conditions in areas of this State have taken their toll, directly and indirectly, of wild life populations. While tigers are being decimated to cater to the export market for their skins, ungulates are being shot at water-holes and river-banks and in the heat of the summer, being beaten out of thick covert by the half-starved tribal people.

Bihar

A drought of unprecedented intensity has been ravaging the forests and wild life, as it has the people, of Bihar. Famine relief work on a massive International scale has been undertaken successfully, and it is a relief to us to hear that not only the forest and district officials whose responsibility it evidently is, but also the individual people of the area, as of far-flung places and urban centres like Calcutta, have extended a helping hand to the wild life populations.

Water-works and artificially filled pools and tanks have been undertaken, and we publish elsewhere the details of one such enterprise by a lady, and others, from Calcutta.

So far, no major deaths on an epidemic or large scale have been reported, though poachers have been active at water-holes.

Assam

Three rhino were reported killed by poisoning by irate villagers in the vicinity of Orang Sanctuary when they destroyed their crops.

Three rhino dead-bodies were also found floating in Kaziranga waters and are suspected of having died of anthrax virus. Another theory is they died of poisoning by villagers.

Madras

There is a proposal to build a golf course on part of the land belonging to the Guindy wild life park. There is much popular resistance to this idea and it is likely to be dropped.

Haryana

It has been reported that the Government of Haryana state is thinking in terms of revising shooting rules, and of affording better safeguards against the threatened extinction of the blackbuck. We are gratified to hear this.

Himachal Pradesh

There is a proposal afoot for the re-vamping of the wild life and forest departments to cope with the changes in the territorial boundaries and increased responsibilities of the H.P. Government. Details are lacking.

Rajasthan

The Asiatic Lion, till now confined to its flourishing colony in the Gir Forest of Gujarat, and possibly, to the unconfirmed existence of some lions in Chandraprabha near Banaras (Varanasi), is now to be introduced into Rajasthan.

A committee of experts visited several areas in the State recently to decide upon an area where the experiment was most likely to succeed.

(See Editorial Notes)

Reports from the Sanctuaries

Wild Life Sanctuaries and Legislation in Rajasthan

BY

GOPI KRISHNA BORA

Chief Conservator of Forests, Rajasthan

(I) THE WILD LIFE

Rajasthan presents an interesting collection of animals and birds, including Tiger (*Panthera tigris*), Panther (*Panthera pardus*), Caracal (*Caracal caracal*), and sloth bear (*Melursus ursinus*). Chinkara (*Gazella gazella*), Blackbuck (*Antelope cervicapra*), and Nilgai (*Boselaphus tragocamelus*) are fairly common and prefer the drier and open areas. Chowsingha (*Tetracerus quadricornis*), the only species of its genus, is another antelope met with. They live near water holes. Sambar (*Cervus unicolor*) and Chital (*Axis axis*) are found in the forest areas of the inner Aravallis and the Vindhyan Ranges. Their distribution is more marked in the Chambal ravines from Kota to Dholpur. Hyena (*Hyaena hyaena*), Jackal (*Canis aureus*), Indian fox (*Vulpes bengalensis*), Mongoose (*Herpestes edwardsii*), Jungle Cat (*Felis chaus*), Common Palm Civet (*Paradoxurus hermaphroditus*) are common. Wolves (*Canis lupus*) and desert fox (*Vulpes vulpes pusilla*) are confined to the desert areas. Indian Hare (*Lepus nigricollis*) and Desert Hare (*L. nigricollis dayanus*), Porcupine (*Hystrix indica*), and a large variety of gerbilles, rats, mice, etc., are the common rodents found in the State. Indian Pangolin (*Manis crassicaudata*) has also been reported from a variety of habitats.

The avifauna of the State is even richer. It is the true home of the peacock (*Pavo cristatus*), the Great Indian Bustard (*Choriotis nigriceps*), and the blue rock pigeon (*Columba livia*). Resident game birds, like grey partridge (*Francolinus pondicerianus*), Indian Sandgrouse (*Pterocles exustus*), Painted Sandgrouse (*P. indicus*), Quail (*Coturnix* spp.), green pigeons (*Treron phoenicoptera*) are quite conspicuous. Large numbers of migratory birds arrive during winter. The commonest of them are duck, teal, geese, cranes, Imperial Sandgrouse (*Pterocles orientalis*), Houbara (*Chlamydotis undulata macqueenii*), Florican (*Sypheotides indica*), and many wagtails, bushchats, larks, starlings, etc.

(II) WILD LIFE SANCTUARIES

For preservation and development of wild life in the State, the Rajasthan Government have created the following Game Sanctuaries in the State Forests.

(1) Sariska Sanctuary

It is situated 200 Kilometres from Delhi on Delhi Jaipur Road (National Highway No. 8). It is famous for Tiger, Sambhar, wild boar, Nilgai, Four-horned antelope and Chinkara. There is a well equipped and electrified Forest Rest House and also Tourist Rest House in the Sanctuary, where Indian and Western style meals can be provided on advance notice.

(2) Ghana Bird Sanctuary

It is a famous Sanctuary of International fame. It is a paradise for ornithologists and a feast for bird photographers. It is situated 50 Kilometres from Agra on Agra Jaipur Road and 185 Kilometres from Delhi and is just 5 Kilometres from Historic Bharatpur Fort. There is a well equipped Rest House in the Sanctuary.

(3) Van Vihar and Ramsagar Sanctuaries

Both are situated in calm and quiet forests of Dholpur, about 20 Kilometres from the town. Agra is only 72 Kilometres. Tiger, Chital, Sambhar, Chinkara and Nilgai are found in plenty. There is a well equipped Rest House also.

(4) Sawai Madhopur Sanctuary

It is about 10 Kilometres from Sawai Madhopur Railway Junction (on Delhi Bombay Broad-gauge and Jaipur-Sawai Madhopur meter-gauge lines). There is famous Ranhambhore Fort of King Hamir nearby. It is famous for tiger, panther, sloth-bear, wild boar, chital and a variety of birds. There is a Dak Bungalow at the Station.

(5) Darrah Sanctuary

Tigers, panthers, bears and wild boar are found in the Sanctuary. It is situated 48 Kilometres to the South of Kota City in well wooded valley of Girdharpura. There is a P.W.D. Dak Bungalow in the Sanctuary.

(6) Talchapar Sanctuary

It is famous for black-buck which can be seen in hundreds at one sight. It is 10 Kilometres from Sujangarh (Bikaner District) and is on of the main Delhi-Jodhpur Railway line. A tourist hut is being proposed in the Sanctuary.

(7) Jaisamand Sanctuary

It is 50 Kilometres South of Udaipur, the famous historic city of lakes. There are Chinkara, Chital, Sambhar, Bear, Wild boar and Panther. There is a well furnished Forest Rest House on the bank of scenic lake of Jaisamand.

(8) Mt. Abu Sanctuary

It is situated near famous Mt. Abu hill station. There is a Forest Rest House also. In addition to variety of wild life, famous Dilwara Jain Temples and Nakki Lake are other attractions.

With constant efforts these sanctuaries are being gradually developed and have become quite famous within a short period. Sariska, Ghana and Van Vihar have been attracting large number of local and foreign tourists.

(III) IMPROVEMENT OF SANCTUARIES

The following works undertaken in the recent past to improve the conditions of the Sanctuaries are worth mentioning:—

- (a) *Construction and Improvement of Roads*:—A net work of roads has been constructed to facilitate observation of wild life by visitors inside the forests in all the Game Sanctuaries of the State. Existing roads have also been renovated.
- (b) *Rest Houses*:—The well equipped and electrified Rest Houses were provided at Sariska, Van Vihar, Ghana and Jaisamand. Rest Houses at Sariska and Van Vihar provide modern catering facilities. These well furnished rest houses have helped in attracting a number of visitors both foreigners and local.
- (c) *Transport*:—Some of our Wild Life Sanctuaries are provided with Jeeps which help the tourists to have a close look of the wild animals of the Jungle inside the forest.
- (d) *Feeding Arrangement*:—Wherever possible, efforts have been made to provide feed to both herbivora and carnivora. To quote an example, live bait is provided to tigers in some of our Sanctuaries with dual purpose. Firstly, to tame the tigers and make them familiar without fear with their environment including man and his Photographic appliances. Secondly, the bait is provided to attract the tigers at localised places where tourists can study and enjoy the habits of tigers.

Efforts have also been concentrated to provide feed for herbivora. For example, regeneration of palatable grasses have been encouraged and artificial feeds have also been provided at localised places.

- (e) *Water Holes, Salt Licks*:—In order to save animals from dehydration and deficiency of salts, number of water holes and salt licks have been provided. Existing water holes have also been renovated. These water holes have also served the purpose of observation spots for the tourists and photographers.

(f) *Watch Towers*:—Old Shooting boxes have been renovated and modernised to suit as Watch towers. New Observation towers were constructed in Van Vihar and Sariska Game Sanctuary.

(g) *Wild Life Publicity*:—Publicity forms an important organ in providing effective protection to the dwindling population of wild animals. To accelerate the pace of this programme, Wild Life Week is celebrated every year at important places throughout the State. During these celebrations processions are taken out, meetings are arranged and School Children are taken to the Sanctuaries, etc. Radio talks and lectures in Schools and Colleges on Wild Life are arranged throughout the State.

Directorate of Tourism publish an attractive Brochure on Wild Life Sanctuaries of Rajasthan.

(h) A few anicuts have been constructed to provide water in the Sanctuaries during summer months.

(i) An attempt has been made to conduct census of black-bucks in the Tal Chhapar Game Sanctuary and the other areas where these animals are found. The census is not yet complete.

(IV) WILD LIFE LEGISLATION

For protection of wild life in the State the Rajasthan Government have enacted legislations and framed rules thereunder and the same are enumerated below:—

(1) Rajasthan Preservation of Certain Animals Act, 1951

Under this Act intentional killing or injuring of peafowl and pigeon is prohibited all over Rajasthan throughout the whole year.

(2) The Rajasthan Wild Animals and Birds Protection Act, 1951

This act prohibits hunting, shooting, netting, trapping, sharing, capturing or killing of any kind of wild animals or birds at any time of the year in an area declared as Reserved under this Act. The Act also empowers the State Government to prescribe close periods for any kind of wild animals or wild birds throughout the whole or any part of Rajasthan.

The State Government have since prescribed the close period for wild animals and birds throughout the whole of Rajasthan and the same is given below:—

Names of Wild Animals and Birds

Close period

- | | | |
|--|-----|-----------------------------|
| 1. Wild pigs | ... | 1st March to 30th September |
| 2. Sambhar, males only with hard horns 30" or longer | | 15th March to 15th December |

3. Nilgai or blue bull	...	1st July to 30th September
4. Tiger 8' or longer	...	1st July to 15th October
Bear, sloth	...	-do-
Panther or leopard, 6' or longer	...	-do-
5. Spotted deer, males only with hard horns 20" or longer	...	1st July to 15th March
6. Grey Jungle fowl	...	15th March to 15th October
Partridges, all kinds	...	-do-
Sand grouse common and rock	...	-do-
Quail, all kinds except rain quail	...	-do-
7. Water birds including suipe (except painted suipe)		
Sand pipers, stilts, Plovers, Godwits, etc.	...	-do-
8. Python	...	1st April to 30th September
9. Hare	...	1st June to 15th October

(3) Rajasthan Forest Act, 1953

Under this Act hunting, shooting, fishing, poisoning water and setting traps or snares in the reserved or protected forests in contravention of the Rules made in this behalf by the State Government is an offence punishable with fine or imprisonment or with both. Also under this Act wild life and skins, tusks, horns, bones and all other parts or produce of animals have been included in the definition of forest produce. The implication of this provision is that any person found in the possession of any part of wild animal can be challaned in Court of law if there is a suspicion that such a produce has been acquired by killing or injuring the animal in the forest.

In exercise of the powers conferred under the said Acts, the Government has made the following rules to carry out the purposes of these enactments.

- (i) The Forests (hunting, shooting, fishing and water poisoning) Rules, 1957.
- (ii) The Rajasthan Wild Animals and Birds Protection Rules, 1958.

(V) RECOMMENDATIONS OF STATE WILD LIFE BOARD

An important recommendations of last 2 Meetings of the State Board for the Preservation of wild Life in Rajasthan, are given below:—

(1) Control of Shooting Licences

The Board decided that shooting permits may be issued by the Conservators, instead of the Divisional Forest Officers and after a year or two the position may be reviewed whether this arrangement should continue.

(2) Grazing in Game Sanctuaries

The Board decided that grazing of cattle in a Sanctuary should be restricted to a minimum if it could not be stopped altogether. A small portion of 2-3 sq miles could easily be protected from grazing and other disturbances.

(3) The Board decided to recommend that those who come for shikar in the shooting blocks should not be allowed to stay in the Sanctuary Rest Houses.

(4) Construction of Rest Houses in the Sanctuaries

The Board recommended that construction of Rest Houses should be restricted to such of the Sanctuaries which are likely to be declared as National Parks.

(5) Constitution of Sub-Committee for each Game Sanctuary

The Board approved the suggestion of forming a Sub-Committee consisting of the Honorary Game Warden, Collector and the Superintendent of Police of the District for each Sanctuary.

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Palamau National Park

By

P. MISHRA

Conservator of Forests

Very few people are aware that in Palamau, one of the districts of Bihar, there is a Game Sanctuary (commonly known as the Palamau National Park) which is rich in wild life. The abundance of game in these forests attracted the attention of the authorities quite early and the Baresand Game Sanctuary in Palamau is one of the oldest sanctuaries in the State.

During the first Five-Year Plan, the area commonly known as the Hazaribagh National Park was constituted into a Game Sanctuary. Earlier this area was the Game Reserve of the Maharaja of Ramgarh. During 1959-60 the Palamau National Park was created with an area of 108 square kilometres. During the following year the area was increased to 168 square kilometres and recently proposals have been worked out to increase it to about 245 square kilometres. Apart from the scenic beauty and the abundance of wild life, the partial ruins of two Forts constructed about 3-4 hundred years back by the local Chero Chieftains add to the attraction for the tourists. The Park has also a small lake (Kamaldah) where lots of migratory birds can be seen during the cold months.

The Park is situated at a distance of 26 kilometres from Daltonganj railhead on the Eastern Railway. It is linked by good motorable road from Daltonganj. The distances from Gaya and Ranchi are 218 and 170 kilometres respectively.

Palamau National Park has the Bison or Gaur in large herds. Other important animals are the spotted-deer, the *sambhar*, the *nilgai*, the hog-deer, the mouse-deer, the barking-deer, the Indian gazelle (*chinkara*), the four-horned antelope (*chousingha*), the sloth-bear, the elephant, the tiger, the leopard, the wild-boar, etc. Among birds the important ones are the teals, the migratory ducks and geese, the grey, black and painted partridges, the quails, the jungle fowl, the peafowl, the green pigeon and the hornbills.

Apart from strict closure to all shooting, a number of dams have been constructed to provide drinking water to the wild animals, particularly during the hot months, when the number of water points in the forests decreases to only a few. Salt licks are artificially made.

View-towers have been constructed at various water points in the Park. On the bank of the Kamaldah Lake a tree-top viewpoint has been erected last year. What follows is a true account of a day's trip through the Park.

It was early in April 1966, the Chief Conservator of Forests was also in the area in course of his inspections. Apart from normal inspection of 'coupes' and forests, an important item in the programme was to examine the growth of wild life in the National Park and, if possible, to photograph some of these. In the morning we walked through the forests on both sides of the Chaturbathwa Nala. The forests along this *nala*, have the highest concentration of wild life, and a large number of wild animals come every day to drink water in this Nala. We saw a few Chital, one or two barking-deer and a few pigs. Meanwhile the day had warmed up and at about 11 A.M. we saw an elephant standing in a small dry Nala about 6 metres wide with raised banks. He was apparently avoiding the sun. At first the elephant was not very concerned but we were keen on taking pictures. After we went very close he slowly moved away but not before we had an opportunity to take a few snaps.

In the afternoon we split up in two batches and decided to sit along the two water-holes (Madhuchuan and Hathibhajwa) along the same Nala. The intention again was to watch and to take some photographs. The Divisional Forest Officer and I took our position in the underground hide-out at the Hathibhajwa Point. We were in the hide-out at about 4 P.M. Not many animals came to the water-point that day. Of course jungle fowls were there as also some *Langoors* and perhaps a solitary deer. By now the lights were failing. I was sorry for the low tally for the day. Suddenly, however, I had a mild sensation as I noticed a tiger approaching the water-hole from our left along a distinct footpath made by wild animals. I wanted to draw the attention of the Divisional Forest Officer. But I was surpri-

ed to find that he was trying to do the same and was intently pointing towards the right. Being sure that he could not have spotted anything more important than the tiger, I was not keen to look that way. But very soon a female elephant was seen walking briskly along the same footpath. The tiger and the elephant were approaching headlong. One saw the other and they stopped facing each other from a distance of about 2 metres. It was obvious to me that they had been meeting off and on, as neither of them expressed any feeling of surprise or annoyance. For a few second they stood facing each other and I was wondering as to who would play the next hand. It was the elephant which took the initiative and threw a mock charge. The tiger left the footpath and skirted a small bush. The elephant renewed its march. Approaching the bush it stopped for a split second and looked defiantly at the tiger before going her way.

All this happened in front of my water-hole at a distance of about 30 metres, more or less in open land. None of them came to the water-hole. The tiger was still there crouching beside the bush, perhaps preparing to come to the water-hole.

The Chief Conservator of Forests had apparently lot of animals approaching the water-hole. He was preparing to take some photographs when he was disturbed by some visitors to the Park. Disgusted he left his hide-out and came to mine. The tiger, however, got a scent of his approach and quietly walked away.

Thus ended a memorable day in the Palamau National Park.

(From a distance of about 30 metres, I could not take even a flash light picture of the encounter. Accompanying is an artist's impression of the encounter by Shree A.K. Chatterjee, one of my Divisional Forest Officers. I acknowledge my gratefulness to him.)

Students' Corner

Raja—My Pet Panther

By

COLONEL KRISHAN KAPOOR

I was posted at Binnaguri in the Doars, North of Bengal in 1965. Skirting the Himalayan foothills, this area has some of the finest forests in the country, and quite a few tea gardens.

One evening, I met the wife of a tea planter, who casually mentioned to me that she had been given a panther cub by a labourer who had found it in the hollow of a tree in the tea garden. The lady did not seem at all keen about her new acquisition. After some hesitation, I decided to approach her the following day and begged her to let me keep the cub. She agreed readily, and I brought the panther kitten home. It was a male cub, and I named it Raja.

The cub was hardly 2 weeks old. It still kept its eyes closed, slept most of the time, and was still unsteady on its legs.

I started my pet on cow's milk served in a feeding bottle, twice a day. It consumed about a pound of milk, reinforced with vitamins A and D at each meal. Soon, I had to discard the bottle, because at each feed it would stick to the rubber teat like a leech and growl when the milk was finished. Raja, however, did not take long to lap up its milk off a soup plate, like a domestic cat.

After about a week, I decided to put Raja on meat, its natural diet. I was advised against feeding it on raw meat, as its taste might turn Raja into a man-eater. This popular belief has, however, little else to support it, except hearsay. Any way, Raja relished this change in diet. It ate chunks of cooked meat greedily, crunching small and soft bones, and polishing large ones clean.

True to the traits of its tribe, Raja insisted on absolute privacy while eating. It brooked no intrusion, and growled at the sight of any body near its food.

Raja knew its feeding time, the direction from which its food came, and my orderly who brought it. At dusk, its usual feeding time, it looked pathetic, restless and impatient. It would pounce upon the orderly who brought its food, scratch him in the bargain, and try to snatch the container from his hands.

On one occasion when its dinner was unavoidably delayed, it tore up my Dunlop cushion, and on another occasion chewed up one of my sandals.

Raja treated everybody with scant respect. The only exception it made was for me and for my orderly who fed it. And, that also after it had had a square meal. It was only then that it settled down in my lap and permitted to stroke it. Raja never purred, however, contented.

Raja looked upon the addition of rice and bread to its diet with great disfavour, and took long to be reconciled. At one sitting it used to consume quite 8 to 10 'chapaties' and about a couple of pounds of meat.

When I had acquired this pet, I knew that I was in for. I had fondly hoped, however, that with patience and perseverance I would be able to tame it sufficiently to make it follow me around, if not like a dog, at least on a leash.

Raja had to wear a collar and was kept on leash from the very beginning. This rig not only enabled me to keep it out of mischief, but also helped it to be recognised as a pet.

Taking it out for an evening stroll was a trial. It had to be literally dragged all the time and pulled away from manifold distractions along the road, such as drains and ditches, hedges and bushes. This dragging business had to be given up. I could not see the point of it, nor could Raja. All it wanted was to be left alone. It hated light, sought secluded corners and seemed only to live for its next meal.

An army dog trainer who had gone to Bhutan with his dog for tracking the culprit who had made an attempt on the life of the King, happened to pass our way. I turned Raja over to him, to knock some sense into its head, but in vain. He tried for a few days to tame and train this shrew, but soon confessed defeat.

Despite all our training and punishment, Raja's behaviour left much to be desired. Pouncing from its cover, it would greet me by knocking me over, blissfully, unconcerned that its claws hurt me. Its scratches were luckily not so septic as is popularly believed. But those on my trousers were not so easy to mend.

Raja treated other animals with utter contempt. It gave a wide berth to the bigger ones like cows and buffaloes and considered them beyond its reach. But lesser creatures had an irresistible temptation for it. Poultry, dogs and goats were its special weakness.

Although it was fun watching Raja stalking a goat, pulling it back by the leash was a horrible experience. It would bare its teeth, snarl, growl and forget its leash, when disturbed in its vigil. Neighbours kept their dogs at a respectable distance from this brute.

Only once did Raja manage to get at the throat of a goat which had innocently strayed into our compound. And, before anybody could do anything about it, Raja had dug deep its canines into the wretched goat's throat. We were able to pull Raja back by its leash only after administering it a severe beating. The goat died of its wounds the following day, and Raja covered himself with disgrace in the neighbourhood.

To watch a panther stalk its quarry is fascinating. It brings to bear on the operation, deft finesse, uncanny cunning and infinite patience. It was a pity that Raja was never permitted to complete the act. This made it mad and nervy.

Despite all the care bestowed upon it, Raja remained fiercely independent, obdurate and self-centered. No amount of training, physical chastisement or rewards, proved of the slightest avail.

My transfer from Binnaguri signalled the end of my un-requested affection for this beast. It was with a sense of relief that I saw it depart. Enough was enough.

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Swamp Deer On Our Farm

By

PRAMOD SINGH

The Doon School

There are only a few of them on our farm. There is a small village called Bitraulla, which is our farm in the 'khadar' of the Ganga near Muzaffarnagar in U.P. They are found in the 'kans' grass and the 'tamarisk' or 'jhow' bushes. It is sandy there. They are massive animals, with a rough coat. The meat is not good eating. Since our master told us to stop shooting them, we leave these 'gond' and shoot Hog Deer, pigs, and *nilgai*, instead.

We shoot animals because they spoil our crops, and to eat them. It is fun. We shoot only in the shooting season and in the daytime. The Swamp Deer like to sit on damp ground in 'nali' grass with water or swamp nearby. When on elephant back, we can't see them, till they suddenly jump up, often in dozens. Their antlers are well-spread, not at all like *chital* or *sambur*. You can't mistake them. Their horns look delicate and white like ivory.

They have long ears, short tails, and cut hoofs. At night one can hear them moving in water from long distances. It can run at thirty miles per hour. We timed once a herd of five while we were on jeeps. When young they are active, but the bigger and older animals become lazy. During rains they love to sit in bogs, and if you see the horns from behind, they look like a basket. There are about seventy near our farmland.

The Doon School Wild Life Society: Ashish Chandola (The Doon School)

There are 140 members, all of whom have also become student members of the Wild Life Society, and their activities include trips to the FRI Deer Park, to various sanctuaries and National Parks, and for shooting and fishing.

The President is Mr. Dang, the Secretary Arjun Raha. There are short meetings every week or two, and films are shown or talks given by experts on wild life.

We have visited the Corbett National Park. Once we saw seven tigers on the kill of one buffalo calf. We have also seen wild elephants, and crocodiles in Boxar. Last week we went to the Rajaji Sanctuary and saw some chital and some Barking Deer only, nothing else. We stayed at Mohand Rest House. Our President came with us.

The Deer Park of the F.R.I., Dehra Dun: Boys from Welham School

At one time there was a flourishing Deer Park at the Doon School, and a flourishing, but not very attractive or safe Deer Park at the F.R.I. Now, the School park has had to be closed down for shortage of funds, but the F.R.I. Deer Park has been shifted into a very well-planned premises made by the Timber Engineers of the F.R.I. The canal is next door, and there are more than twenty chital deer in the park. They are all healthy, and some have very vast antlers. We went to the Deer Park recently and had a picnic there. We enjoyed it very much and would recommend a trip of this sort to other schoolboys.

Answer Man: (In this column we answer the questions often posed to us by our young friends and we invite you to write to us with any questions that you would like to have answered..... ED.)

Question: Sir, Why can't the Government fence all the forests? This way poaching will stop, as poachers will get caught at the fence or gates.

Answer: Yes, but it will be so costly that the Government will never be able to afford the cost. Then, who will man the gates? The officials are limited, and you cannot have guards everywhere !

Question: Why not arm the guards, and let them shoot poachers ?

Answers: There are far too few guards to be physically present everywhere. And to arm them may create more problems than it solves; as it is, wild life wardens of Ranger-level and above ARE armed with pistols, and the wild life guards ARE armed with shotguns, at least in U.P. And even so, there are complaints that the guards' shotguns are not being used for the correct purpose !

Question: Why not give motor-cycles to the wardens, then ?

Answers: Ranger-level wild life staff Do get motor-cycles in U.P., and are doing very good work in stopping poaching to the best of their abilities.

It Happened in India:

Shooting seasons for mountain and high-elevation fauna in the six States of India which touch the Himalaya show no sort of co-ordination between them. One State, indeed, has not even issued a shooting licence since Independence, for any high-elevation animal, at least, no such trophy has been reported shot that we could ascertain.

And How They Do It Elsewhere

The Frankfurt Zoological Society has decided to donate 2,000 pounds to the Uganda National Parks for the purchase of a light aircraft for use against poachers. The money was donated by the 'fans' of Dr. Bernard Grzimek's programmes on television.

United States Secretary of the Interior has announced that the United States was now laying aside more land for recreational use, forests, sanctuaries, etc., than is being used for new roads, airfields or urban development.

Almost nine per cent of the land area of New Zealand is now set aside for National Parks.

.....Report in the National Park News.

Correspondence

Sir,

Allow me to congratulate you on the most recent copy of 'Cheetal'. I think it is the best copy you have ever produced. The articles which I particularly enjoyed were: Our-selves, Red Jungle Fowl, Wild Elephants in the Nilgiris, Wild Life Study, Siriska and I was specially interested in your report on the Himalayan Wild Life Research Project. I thought you were going to get some help for it through the World Wildlife Fund as it is mentioned in the book they published by Collins called "Time for a New Ark"; evidently, they have given priority to other projects. You mentioned need of a telephoto lens. I have a six-inch lens for a Bell and Howell 16 mm camera, and may be able to help.

I would be interested to have more details of your project when you have prepared a fuller report.

Yours etc.

Dr. T.H. Bassett,
Alberta,
Canada.

Sir,

India is a welfare-state, and the Government undertakes all sorts of activities, and underwrites and helps many non-governmental projects. Surely, amongst these, the premier Asian Society, our Society, for the preservation of an invaluable national heritage, deserves to be generously included. Why is it that you have not yet succeeded in your efforts to secure sufficient aid to convert 'Cheetal' into a Quarterly with many more picture-pages, colour-blocks and superior paper and get-up?

I feel that you have not pursued the matter in the right quarters. The Government of India is a benevolent and idealistic government, and I feel if you only reached the right people, you would have little difficulty in securing aid.

Yours etc.

'Well-wisher',
Calcutta.

(We receive an annual grant-in-aid towards 'Cheetal' of Rupees one thousand which, though ad-hoc, is practically a recurring grant but is not sufficient to make this journal quarterly. We are trying hard for further grant but we are doubtful on account of financial difficulty of the Government. We would certainly welcome as help in this direction from our members and subscribers. We can assure you, we are still trying to secure aid, but it is not proving easy. We would certainly be glad to approach any 'right people', and have already done so.....Editor)

Sir,

I have just received CHEETAL for April 1967, and hasten to write to you on two matters:

1. On page 64 you say that "an expedition to Sikkim ... is being launched ... to collect data, especially on the Sikkim stag ...", I thought that it was well known that the *shou* or "Sikkim Stag" *Cervus elaphus wallichi* has never existed (so far as we know) in what is now Sikkim. One of its main habitats was the Chumbi Valley which used to be part of Sikkim (hence the name "Sikkim Stag") but which has for a long time been part of Tibet. The *shou* used to be found in adjacent Bhutan, but the King of Bhutan (who is very knowledgeable on the fauna of that country) has informed me that he is convinced that the *shou* is unfortunately now extinct. He has also informed me that mistaken reports are sometimes made about its existence because the Bhutanese also refer to the sambar as *shou*.

I have tried in vain to obtain evidence as to the existence of the *shou* in the northern parts of N.E.F.A.--without success. And north of the border it is unlikely to have been spared by the Chinese. For further information on the *shou*, my paper on this deer in the Journal of the Bombay Natural History Society for December 1958 (Vol. 55, 3), and F. Ludlow's paper on the same subject in the Journal for December 1959 (Vol. 56, 3), may be consulted if required.

2. On page 68 reference is made to a report by Col. H. Nedou through me about markhor *Capra falconeri* being found in the Kajinag area of Kashmir. Then you point out that the markhor is not a "wild sheep" as reported. I do not think it necessary for me to say that neither Col. Nedou nor I could possibly have called the markhor a "wild sheep", because every sportsman and naturalist in India knows perfectly well that it is a wild goat, and even those with only a rudimentary knowledge of latin know that *capra* means goat!

I think it is a pity that you did not follow the usual practice and mention the source of the report—which can only be page 335 of the December 1966 ORYX, whose editor (obviously unfamiliar with India's high elevation fauna) has mistakenly referred to these animals as "wild sheep". Needless to say, I wrote and pointed out this mistake to the editor as soon as I received this copy of ORYX.

Yours etc.
E.P. Gee,
Shillong 5,
Assam.

(Mr. E.P. Gee's view is that the *Shou* is finally and irretrievably extinct. He bases his, our mind somewhat pessimistic, view on his conversations with certain persons in Bhutan, and his trips up the Towang Road in Kameng and elsewhere. We have ourselves spent

months on seeking clues and information about this elusive and rare animal. We heard from a knowledgeable army officer posted near the trijunction of Bhutan, Sikkim and Tibet that though sambar is often mistakenly called *Shou* in Bhutan, he had evidence of a pair of its antlers. We will wait to see this before saying anything further, especially since Mr. Gee discounts this possibility and his opinions carry great weight with us Editor)

Sir,

A retired tea-planter, an Englishman, has started a residential Tourist Camp at the Manas Sanctuary in Assam, called the Manas Tourist Camp. I would like to know what is happening to the idea of the Society taking over and running something on similar lines. If an alien, however helpful, can be given such facilities and encouragement and privileges by the Forest Department of Assam, surely it should be much easier for the Wild Life Preservation Society of India to gain similar privileges. I would think these are your 'duties', really.

I will look forward to your response. I would also offer to help you in an honorary capacity if you organise such a Camp where you can show animals to visitors, which is more than is being done these days in many sanctuaries like Rajaji and Motichur.

Yours etc.
'Inquisitive',
New Delhi.

(We have repeatedly asked for such an arrangement where we could manage a part of a sanctuary on a purely honorary basis to set a precedent, and negotiations are still in the air. There are in U.P. certain technical hitches, we believe, but if the comprehensive wild life bill is passed, we hope to reach an agreement then Editor)

Sir,

I believe it is conventional to use certain fixed spellings for animals, and to have standardised terminology and nomenclature stands to reason, but could you please tell me why we persist in using such odd and anglicised spellings like 'goral' for 'ghooral', 'sambhur' or 'sambur' for what would be more accurately 'sambhar', 'bharal' for what in India is pronounced 'burrhel' like the Hindi r-r hard and not aspirated ?

I feel strongly we should adopt a more faithful spelling and nomenclature, instead of adhering by old-fashioned names and pronunciations established by the generally less excellent type of foreigner who came to India in the heyday of Imperialism.

Yours etc.
P.T. Thapan,
Lucknow.

(There are two problems, though we agree with our correspondent in the main; there is a wide and local variation in the spellings, pronunciation and nomenclature of wild animals and birds and plants, etc., from one part of India to another. There would be a lot of chaos if we started calling barking deer 'kakar' as it has several other Indian names. Similarly with ibex or snow leopard. We ourselves used to rebel against this imposed convention, but we now try, often unsuccessfully, to follow the standardised system of Ellerman and Morrison-Scott's book on the Palearctic and Indian mammals Editor)

* * * * *

Sir,

Things were bad enough when the hill areas of the old Punjab were in Punjab, and shooting rules varied from place to place as you crossed the political boundaries. Now that these areas have gone to Himachal Pradesh, I suggest that the Government of H.P. devise a proper scientifically based schedule of shooting rules and seasons for all their hill areas.

Yours etc.
S. Singh,
Simla.

(We have often recommended the same ourselves Editor)

* * * * *

Sir,

Due to severe drought in Bihar, alongwith human life, wild life is also in danger. The water scarcity has made the problem worse. For want of water in forest areas, the animals have started coming outside the forest and are becoming victims of unscrupulous 'shikaris'. In this regard we have moved the authorities and steps are being taken in the matter. The most appreciable work has been done by Dr. Suresh Singh, Deputy Commissioner of Palamu who has saved, so far, the wild life of Palamau district, specially in the Betla National Park. Through the help of rig-drilling machines several water-holes have been provided in the forest areas, and wild animals are getting water in the forest and are not falling victim to human beings. It would not be out of place to mention here that in similar circumstances in the year 1956 half of the bison population of Palamau were killed or died for want of water. But upto now not a single bison has been either found dead or killed. Credit goes to our most energetic young Deputy Commissioner, who is a staunch supporter of wild life. I suggest you please send him a letter of thanks for what he is doing to preserve wild life.

Your etc,
Kumar Surendra Singh,
Gidhaur, Monghyr.

* * * * *

Sir,

I think that we have been able to achieve a certain degree of real success in the Palamau district of Bihar. Quite apart from digging water holes and transporting water over great distances to troughs installed in the dry nullahs, our action was directed towards keeping poachers away from these installed water holes. This was a very real problem with such poaching being attempted on a considerable scale.

My wife is already working on a detailed note of the activities, and she has in fact given up almost all of her time over the past two months to this project. She will certainly wish to send you a copy of the write-up, and we would then be delighted to get together with other good friends and work out a long term programme. Incidentally, we have received help and guidance from several of your friends, subscribers to "Cheetal", for which we are most grateful.

Yours etc.
R.H. Wright,
Calcutta.

* * * * *

Sir,

Mr. Nicholas E. Collias' article on 'The Life of Red Jungle Fowl in North Central India' in the April 1967 issue of Cheetal gives an interesting wealth of informations on Jungle Fowl. I was particularly interested to read that "cocks with hens seemed to us more often to have larger combs than the males excluded from hens. It is known for domestic chickens that the comb size can be stimulated by male hormones".

Some 11 years ago I saw jungle fowls of almost the same age shot by my brother at different seasons had different comb sizes. The ones shot in summer had bigger combs than those shot in winter. This intrigued me and when I asked the native hunters. I was informed that during summer various insects like Jite, mosquito, etc., bite the combs and that is why they become swollen and bigger during the hot rainy season. Afterwards I myself have shot quite a good number of jungle fowls in summer and the combs appeared to be bigger than those shot during the winter though they appeared to be of about the same age and without exception all the cocks shot in summer had ticks in their combs.

Yours etc.
J. Angami,
Nagaland.

Himalayan Notes

By

HARI DANG

Originator and Chief, Himalayan Wild Life Research Project.

Even if geographical and ecological factors were not sufficient reason, political imperatives make it advisable to treat the fast-depleting wild life resources of the Himalayan complex of mountain ranges as one unit of study.

Though nearly half-a-dozen nations and thirty major species are covered by the Himalayan region, and a variety of habitats shelter these species, there is a certain unity in both the terrain, ecology and problems faced by them, that makes this unified regional approach tenable.

Since no outside help has been received by the Himalayan Wild Life Research Project apart from a sum of rupees two thousand received by the Wild Life Preservation Society of India from Sir Dorabji Tata Trust, and since none is certain yet, and the Society the "Sponsor", is in no position to offer any assistance, it will take another three years to complete the basic aims of the project. This is unsatisfactory, but inevitable. It has been decided, therefore, to make use of whatever notes and material we can gather from time to time, instead of waiting for the publication of the definitive report in book form. These notes and memo will appear in this column of 'Cheetal' in future.

* * * * *

The Clouded Leopard (*Neofelis nebulosa*):

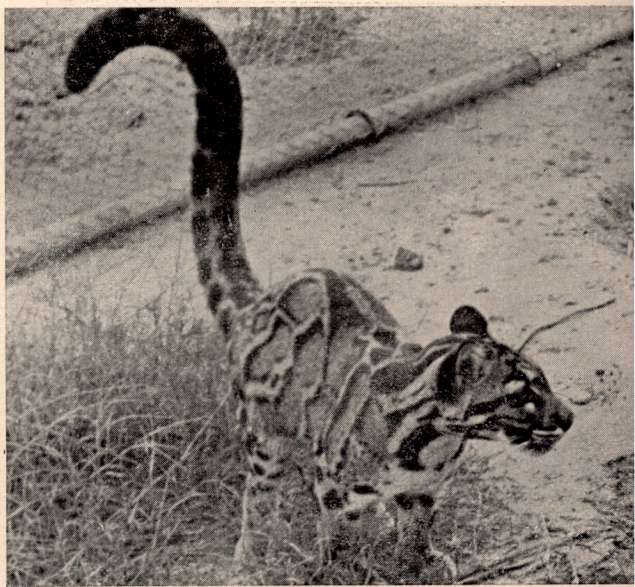
We were returning from the week-end gathering at the Dhunsiri Club in Assam when two vague forms on the parapet of a culvert in the forest patch on the border of the Mikir and North Cachar hills caught our attention. We generally had our shot-gun with us in those days for such chance encounters, and had not seen the light of conservation or legality in these matters. But something fascinating and mysterious about these two 'cats' made us stop the land rover and watch, rather than shoot.

That was our first encounter with the clouded leopard, an animal that has increasingly fascinated and attracted us ever since. The pair, for such they were, kept on sporting on the parapet, showing off their distinctive markings to advantage in the lights of the 'rover'. Long, sinuous bodies, curving and twisting over each other, short limbs, making the bellies almost touch the ground, and lovely, long, bushy tails that seemed to have a life all their own, now erect in alarm, now curved in cat-like playfulness.

But for the shorter limbs, the clouded leopard is allied to the tiger and the lion. But for the highly elongated and developed upper (and lower, we found!) canine teeth, it



Male Himalayan Monal, one of the most
colourful of all pheasants.
(Photo: Philip Wayse)



Clouded Leopard

(Photo: Hari Dang)



Clouded Leopard

(Photograph by the courtesy of Sri K.S. Sankhala)
(For reference, please see page 68)



Rock Lizard's copulation



Rock Lizard at Sahasradhara, Dehra Dun.

(Photographs by the courtesy of Mr. R.K. Bhatnagar)

(For reference, please see page 39)



RAJA ... A Pet Panther.

(Photograph by the courtesy of Col. Krishan Kapoor)

(For reference, please see page 58)

would be a proper feline as we normally know that tribe. Its canines, however, especially when viewed in the bleached skull, give an impression of similarity with the great 'sabre teeth' of the pre-historic tiger !

Pale, rich, yellowish grey, with hints of brown, becoming tawny or slate brown underparts; the predominant impression is rich greyiness with lighter shades, though further east and north-east from India, we learn that they are browner. The cheek-stripes of the face are distinctive, but the size, generally around six feet, leaves no room for confusion with the lesser cats. The clouded pattern of blotches and fairer background fur gives it the name it so richly deserves. The forests of Sikkim, Nepal, Bhutan and Assam are the Indian range of this animal.

Trees are the life-blood of this arboreal cat. It lives in hollow ones, breeds upon the branches, the actual process of mounting and copulation, as observed by our tea-planting 'koyas' and 'oraons' of Assam, being effected upon trees. It is from trees that the animal attacks its prey, generally smaller deer, sheep and goats, depending upon where he lives. In the mountains of Sikkim and Nepal, the shepherds invariably complained to us of the depredations of the 'pungmar' or 'am-cheeta' respectively. They never seem to confuse the clouded leopard for the snow leopard, though we have known many people, traders and shopkeepers in the hill-stations, to do so. There is much variation in skins, but no doubt remains once a skin is seen.

Since that night in the Mikir Hills, we have seen this animal nearly a dozen times, never once raising our guns, letting it pass unmolested in the beats in which often and often it was flushed with the jungle fowl and the pheasant in Assam.

To photograph this in the wild seemed an almost impossible feat, so we hastened to the Delhi zoo when we heard of their pair. We made intimate friends with the female, 'Jamuna', though the male resisted our blandishments. She is friendly, and would climb onto our shoulder, but did not pose for photographs as well as we had hoped. Still the illustration is adequate for this rare creature of which so little is known.

It had not bred successfully in captivity till recently at the Frankfurt zoo where a litter of three was born last year, but its survival seemed problematical. In Colorado Springs, U.S.A., one of a litter of 4 survived on bottle-feeding. The only way to further study its habits appears to be in captivity.

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Breeding Display of the Monal:

Lophophorus impejanus is one of the most beautiful pheasants of the Himalayas: its flashing, sheeny blue and metallic greens, its rust ventral patch, its white dorsal wing patch,

the latter two particularly prominent in flight, and its clarion call when disturbed, make it one of the most memorable sights that these mountains have to offer.

Though a 'paper' protection has been given to Monal by declaring them completely 'protected' in U.P., this protection does not extend to other areas, and even in U.P., it is all but impossible to enforce because of the difficult nature of the bird's habitat, where enforcement staff might well never reach. Though much could be written of this, I will only expand a quote from my diary written during the course of an expedition after photographs and for mountain-climbing in Garhwal. This gives perhaps the only first-hand description of the breeding behaviour of a Monal cock that I know of, though Whistler mentions the upward flight and the glide down to the hens.

"Camp under the hoary silver birches of Reasu at roughly ten thousand feet. The carpet of moss and humus soft like down and very thick. Some spruce and rhododendron on this, the sheltered northern side, with the Jaonli torrent separating us from the bare, wind-swept, but grass-covered and brush-choked southern aspect of the hillside across.

"Got up at four a.m. Perspired profusely in the chilling morning cold on the climb to the ski-slopes to the top of the ridge across the river. Skied down to grass level by 8.00 a.m., on very hard snow. Too fast and a bit dangerous.

"Shepherds very friendly, complained of red bear and snow leopard; total loss in two weeks, seven sheep killed! Hot tea without milk, with 'gur'. They agreed to beat the thick covert for Monal.

Six men walking athwart the slope, contouring through the forest of birch, rhododendron and occasional stands of spruce: Shrieking whistles, and over two dozen birds in all. Two shots, one bird; the dog went down to fetch it.

"Sitting comfortably in a sequestered re-entrant with a patch of snow with log panting beside. Smoking. Two brown birds leave a patch of rhododendron, start scratching among leaves near the snow. They are joined by three immature males in summer plumage. Then comes the cock bird, a fine old male Monal. Lustrous metallic bronze-green above, with purple and blue sheens, with a peacock's crest on the crown.

"He makes for a tussock of dry grass and struts about. The crest is alternatively raised and depressed, then kept tautly raised, while the wings trail the leaves and the ground, stretched tightly wide open. The tail is prominently held erect, stretched upwards. Then he jumped up some ten feet into the air, partly with flapping of wings, to glide noiselessly down, some twenty feet lower than the hens, with wings held high above the body, folded upwards. He climbed into the thicket, and returned again, from above, in a flight which showed the white-rump to the hens to advantage. Is this to ensure recognition or assert

dominance? The three immature males, perhaps of the previous brood, disappeared, and he clucked in a fashion I had never heard a Monal do before, circled the larger hen, while the smaller one pretended not to notice. She scratched in the humus of the snow-wet patches, while the larger hen pressed herself on the ground, and then the cock bird mounted her. This happened thrice in the half-hour that I watched all this scene, unobserved, smoking peacefully, and wishing I had had a camera with a good lens”.

Since then we have had similar viewings and the pattern has always been much the same, though the wings are not always trailed, and more than one hen may be mounted in the hour after dawn or before dusk.

* * * * *

Markhor (*Capra falconeri cashmiriensis*):

Though on the list of threatened species of the IUCN, and increasingly restricted in habitat, though often flourishing in its restricted habitat because of military factors, such as the cease-fire lines near Baramula in Kashmir, this rare true goat of the mountains is still being shot by “shikaris”.

Two horns recently reached a taxidermist's shop, both from a senior army officer posted in the neighbourhood of the cease-fire line in Kashmir. One was that of a massive animal, measured 52 inches; the other was an immature female, we suspect.

Such a shame this officer did not use a camera instead, for photographs of this animal are not easy to come by.

* * * * *

The Delhi zoo's snow leopard (*Felis uncia*) had been presented to it by a Kashmir minister interested in wild life. It was despatched to Simla for the summer, suffered no evil consequences and is now back in Delhi, looking quite fit. (See elsewhere in this issue.)

The Snow Leopard and Its Prey

By

HARI DANG

Introduction

Although as early as 1777 we find Schreber classifying the Ounce of the high mountains of Central Asia and the Himalayan ranges as *Felis uncia*, even today our knowledge of this increasingly rare Himalayan animal is far from complete.

Ehrenberg in 1830, Gray in 1854 and Horsfield in 1855 have all published papers on this species in the Annual Magazine of Natural History and elsewhere, and Pockock in the early Nineteenth century attempted a more or less scientific study. Yet, the very nature of the animal and the terrain it inhabits, the habitat and the largely nocturnal movements, forbid better familiarity. Our chief source of information so far has been the sportsman in the Himalayas and elsewhere, who, by nature, may have been observant, but was seldom a trained scientist.

The following study is based largely upon my own few score encounters or close-encounters with the animal, and as many kills of it, and over two hundred droppings carefully examined, though not in the laboratory, for remains that gave clues to its feeding habits and other characteristics. I have freely consulted available literature, and am grateful to too many sources for individual acknowledgement.

Description

The average snow leopard stands generally under two feet at the shoulder, and averages a length from nose-tip to tail-tip perhaps between six and seven feet, though there appears to be some variation outside these limits, Western and Central Asian specimens being somewhat longer in the tail and Eastern Himalayan specimens stockier in the body. The tail is bushy, and generally half the total length. The distinguishing characteristic in appearance which marks it clear from the various races of the panther or leopard, of which latter several are recognised, is the length and thickness of the fur. Against a prevailing background shade of pure-white to dirty-grey, though white is commonest, the pattern of rosettes and spots, with lighter centres everywhere except on the rear part of the tail and the limbs, stands out beautifully. There are light-coloured spots on the outer sides of the ears, reminiscent of tigers, and the ventral and under portions are almost pure white.

Though panther skins from higher mountain areas attain a coloration which is often quite misleadingly bright, and might conceivably be mistaken for Ounce, there is little chance

of the snow leopard ever being mistaken for a panther. Conclusive evidence as to the animal's belonging to the group of great cats, tiger, lion and panther is provided by similarities in skull-construction, and even the mark that distinguishes it from the other three great cats is a feature of the skull, the auditory bulla. The only dead Ounce I was able to actually weigh on a spring balance used for weighing out rations on climbing expeditions turned the spring at 110 pounds, but I consider this a fair average, as he measured six feet six inches, with a tail of three feet.

Distribution and Status

The geographical distribution of the snow leopard is extensive. On the west it is known for a certainty to occur in the Hindu Kush (Burrard, Pocock); in Persia, it used mistakenly to be recorded, whereas actually the species under reference was the Persian race of the panther.

Eastwards the boundary is open to some doubt, as skins are known to be available in China, though they are probably imported. They might equally be stray Ounce that have crossed over from the elbow-bend of the Himalayas across the Salween and Mekong divides, or further northwards.

The Altai, and even the Kuen Lun and the Tien Shan were at one time probably in its range. I have personally ascertained, either through visual sighting, droppings or tracks, or through local information, of its existence in the Swat Kohistan, and westwards to the Pamirs of Russia; all along the Indus valley, in Ladakh and the Kara Koram, in the Dhauladhar and the Zaskar ranges, in the Pir Panjal, and all along the Himalayas from Punjab, Himachal, Garhwal, Kumaon, Nepal, through Sikkim and Bhutan and NEFA.

It has been recorded from Manchuria and the region of the Amur, though this latter as well as the reports from the Caucasus, Armenia and South Persia are open to doubt.

Thus, though found over a large longitudinal and latitudinal extent, it is clear that it is restricted within this range to temperate to cold temperate regions of at least seasonal snow-fall, and generally glaciated regions of perennial frost. The skins and the rich fur would lead one to expect this, though there is profound variation both in the density of the fur and the length of hair between seasons, and winter coats differ greatly from summer coats, showing some measure of adaptability to change of season as well, perhaps, as to change of environmental conditions.

Within this range, snow leopard are by no means abundant or prolific.

Within this geographical range, the snow leopard inhabits the rugged mountainous tracts, over more or less uniform types of ecological terrain: at the lower limit, forests of

spruce, fir and deodar, descending into the tangled world of green-leaf Oak and tree rhododendron in the winter months following its prey, and through silver birch and juniper and *Rhododendron campanulatum*. The characteristic habitat of the species is the zone of alpine meadowland, with the scrub below this and the moss zone of the shifting snow-line above it. This is where it finds its prey and the most effective concealment and camouflage. This, too, is where its heavy coat makes it most comfortable.

The zone of alpine country extends all along the snow-line of the Himalayas on both the southern and northern slopes, and even to-day almost every major Himalayan valley has its pair of snow leopard, except where the village shikari or the pelt-hunter has penetrated, as in many areas of the accessible parts of Kashmir and similar regions.

For the purpose of this limited first study, it has been found best to follow the entomological classification of 'life zones', which makes the 'Nival Zone' the characteristic habitat of the snow leopard, including therein the belt of Bush Rhododendron, the timberline of spruce and fir below, and birch and juniper above this; higher still in the Nival zone are the Montane Tundra, the Alpine Zone, the Snowline and the Arctic Zone above the snowline. This is followed in Table 1 (See Page 76).

Population

In the absence of comprehensive and authentic first-hand field research, reliable data is lacking. Even 'estimates' have never been attempted, and that wisely, for normal census techniques used for other species are unworkable in the Himalayas and quite impracticable for use on the snow leopard. While trying to continue my plan of obtaining 'reports' by corresponding with sportsmen and villagers and others interested, on the basis of map-study, and extrapolating from figures for those valleys and areas where I have personally hunted for signs of the animal, a very rough working estimate is possible, and this is in the region of 400, give or take two hundred. This covers only the Himalayan complex of mountain ranges. It is somewhat arbitrary, but till better statistics can be worked out, this serves as a guidepost. Perhaps, not an unreasonable one because of the figures for pelts reaching the Kashmir (Srinagar) market.

As to the composition of the snow leopard population of the Himalaya, it might be best not even to attempt a rough estimate, as it is bound to be entirely arbitrary, in the absence of reliable figures for even one area. One fact has been repeatedly noticed, and that is the incidence of pairs working valleys in co-ordination, the prey, generally *bharal*, being chased from one part of the valley into the area where the other animal of the pair hides in waiting for the frightened herds. Often, the pair will eat together at a kill, whether a 'natural' kill of *bharal* or a goat or sheep or horse lifted from a caravan, shepherd's camp or village.

Reproduction and mortality figures are equally unknown and it is safest not to hazard a conjecture at this early stage of the study of the snow leopard. I have only twice seen cubs, and the first time these were three, one of which had died in a snow storm in the Tons valley, which forms part of the Govind Ballabh Pant Pashu Vihar in Western Uttar Pradesh. Villagers and 'bhotia' tribals have confirmed seeing two and three cubs on several occasions.

The mating season, judging from the fact that cubs have generally been seen in summer or autumn, till December, must be in early spring to late summer, but here again, it is mostly in the summer and autumn months that people move about the high mountains, so it would be natural to gain reports only during these months. Nothing can be claimed definitely at this stage.

Pre-natal and post-natal mortality must be high, because of the lack of sufficient prey populations in much of its range, as well as through the destruction caused by marmots and foxes, and possibly *red bear*, which would give short shrift to the young if encountered without parental escort, which latter is often lacking because of the need to hunt game, though littering probably always takes place in safe sconces and caves and overhangs, and generally inaccessible terrain (Table III on caves and overhangs).

Range

Though the habitat is difficult from the point of view of human beings, the splendid ease of movement of the snow leopard over it gives it a wide mobility, which it needs in any case to follow the herds of *bharal* or ibex or *thar* from one pasture or valley to another as they follow the grass and avoid the herds of domestic sheep and goat which climb higher into the winter-snow zone as the snow melts in spring and summer and autumn.

Individual animals have been identified only twice by me, once in the Tons valley, where a young leopardess and an old male had teamed together and were found to cross two passes from the Har-ki-Dun to the Bandarpunch Tons valley regularly, in pursuit of the three major herds of *bharal* which then inhabited the two valleys. The second time was a prime male, distinguishable by its twisted right fore-foot, the consequence, according to the villagers of Ralam valley in Kumoun, of an LG shot from a muzzle-loading shot-gun fired by a villager whose mule had been killed and partly eaten by the animal at a height of thirteen thousand feet near the Birjunga Dhura (Pass) leading from the Ralam valley to the Goriganga valley westwards.

On many other occasions, it has been presumed that the same pair or animal was ranging over one valley or crossing from one to another, but proof was lacking.

Data on social behaviour and communications is lacking, but the vocalisation of the snow leopard has often been heard. It makes a purring growl when circling a camp of

Table
First-hand Visual Sighting of *Felis uncia*

Time	Height at which seen	Month	Locality	Single or Pair
Early Morning	(a) 13000 feet	October	Ralam-Kumoun	2
	(b) 12000 feet	May	Nanda Devi Sanctuary	1
	(c) 13000 feet	July	Tons Sanctuary	3 (cubs)
Sunny Day Time	(a) 15000 feet	May	Jaonli-Garhwal	1
Cloudy Day	(a) 14000 feet	May	Jaonli-Garhwal	2
	(b) 10000 feet	September	Tons Sanctuary	2
	(c) 14000 feet	June	Nanda Devi Sanctuary	1
	(d) 11000 feet	August	Lahul	1
	(e) 18500 feet	August	Lahul	1
Late Evening	(a) 15000 feet	October	Tons Sanctuary	1
	(b) 8000 feet	December	Mansiari-Kumoun	1
	(c) 17000 feet	April	Everest Base Nepal	1
	(d) 15000 feet	March	Thyanghoche' Nepal	1
Night	(a) 12000 feet	March	Ralam-Kumoun	1
	(b) 8000 feet	December	Mansiari-Kumoun	2
	(c) 15000 feet	August	Lahul	1
	(d) 18000 feet	September	Ralam-Kumoun	1

1

Total number of occasions on which seen: 23

Terrain and Life Zone	Probable motive of activity
Arctic Zone : Serec and old, hard snow	Stalking herd of ' <i>bharal</i> ' in cooperation
Alpine Zone : Montane Tundra : Serec and grass	Stalking ' <i>bharal</i> ' herd
Alpine Zone : to Arctic : Some grass and rock	Strayed from overhang. One died, two returned to overhang
Soft Snow—Arctic Zone	Probably ranging. Disturbed by Expedition. He had probably killed 3 sheep a week before this in the Tundra forest below
Arctic Zone—Hard Snow and rock	Probably ranging-- Inquisiting about expedition's movements
Montane Tundra : Grass and scrub	Stalking a heard of ' <i>bharal</i> '. Two Red Bear were only 1 mile away in clearview
Alpine Zone—grass and serec	Stalking a covey of snow cock
Timber line—wide reversed-boulder	Probably crossing to another valley
High Snow and serec ridge	Crossing the Milang watershed
Arctic Zone : patchy snow and scree	Probably crossing from Hat-ki-Dun to the Tons Valley proper
Taiga—Spruce and Fir forest	Over fresh kill of mule
Arctic Zone : glacier moraine	Disturbed by Expedition.
Timber line and Tundra : grass and scrub	Stalking a herd of ' <i>thar</i> '
Alpine Zone : Snow near village	Over a sheep-kill
Taiga—Spruce and Fir forest	Over a fresh mule kill
Alpine Zone : grass, rock and scree	Fresh kill of <i>ibex</i>
Arctic Zone : Snow and rock	He killed a <i>thar</i> male. Came around for a snack off the 'kill' remains, but we were away climbing the peak.

shepherds at night, if the bhotia mastiff dogs on guard repeatedly frustrate its efforts to enter the herd or the enclosure where the sheep are often kept at night. We have ourselves heard this noise around our mountain Base Camps, but no full-throated growl, as reported by *bhotias* and villagers has been verified. The two animals I shot let out startled growls reminiscent of the panther when they were hit, and one animal into which I bumped while stalking a herd of *bharal*, a quite unusually frequent occurrence both in literature and in the field, snorted in surprise.

Of the 17 occasions when I have seen snow leopard, four times we were both after the same quarry, thrice after *bharal*, once after three ibex in Lahaul. On all occasions what gave the snow leopard away to me was the twitching of the tail, twice followed by bounding leaps when the animal realised it was not alone in its hunting!

The three cubs I saw were originally housed in an overhang in the area of the Base Camp we had established in the Tons valley, and they had evidently been left to fend for themselves, had strayed out of the overhang shelter, and one had been killed by a night spent out in the open where the snow storm had crusted him with powdery snow, and they were in an emaciated condition, the lack of nourishment being the likely cause. The female when with young is said to retreat with constant looks over her shoulder, scurrying her cubs ahead of her, but this has not been confirmed by personal experience.

Hunting

The sportsman's accepted theory that one of the pair lies in wait above the prey, while the other drives the prey towards the waiting animal seems to be borne out by my own experience as well as by the reports of others. The two occasions when I saw pairs of leopard hunting together after the same herd I was after, the disposition of the animals bears this out. On many other unconfirmed occasions, a second animal was found in the vicinity of the one visually seen, by deduction from the tracks seen later. With wary prey like *bharal* and ibex, this seems entirely reasonable to presume.

Though largely nocturnal in its movements in the vicinity of human habitation or encampments, as evidenced by the fact that most sheep, goats, horses, mules and dogs, etc., found by me to have been killed by snow leopard, and these number 18, were killed or carried away in early mornings or discovered, at any rate in the early mornings, the snow leopard quickly loses its shyness in regions which are little disturbed. We were fortunate two years running to spend the whole summer in the Nanda Devi Sanctuary, and found snow leopards moving about freely during the day, often and often chasing herds of *bharal* from one part of the sanctuary to another, though we could not ourselves see them except to deduce their presence from their tracks.

On only a unique occasion have I seen a snow leopard actually pulling down prey; this was in late autumn, the 19th of November, 1958, in the Raj Ramba valley, east of Ralam in the Kumoun Himalayas. Not having succeeded in getting higher than a herd of seven *thar* on very difficult rocky terrain interspersed with overhangs at a height of 12,000 feet above the lower glacier, we were lying behind a boulder watching the *thar* climbing leisurely up the scree and the rock overhangs towards the north ridge of Raj Ramba peak, when a flash of white and grey fur dived into the spread out herd, and rolled down some hundred feet, all the time hanging on to a young *thar* ewe. The *thar* was in a very bad shape when we reached it, but still breathing. The snow leopard, of course, had vanished as soon as we rose to view. He had managed to maul the *thar*, but the characteristic death-grip on the neck and throat was missing. This must have been an exception, because of the 34 natural and domestic kills I have seen, most were neatly killed, either with the neck or the spine broken, only in some cases a real struggle having ensued before the final death of the prey.

Stalking, and the snow leopard's coloration fits him in his environment admirably for stalking, and a sudden rush seem to be the rule.

When the kill is a domestic animal, the feeding, like the killing, is generally nocturnal. But of the 17 natural kills seen, (Table II), 11 were deduced on the basis of the evidence of the tracks to have been made in the daytime, generally the early mornings and late evenings.

The actual killing of the prey is subject of conjecture, but it seems on the basis of the 'kills' actually examined (Table II) that the snow leopard is similar to the panther in preferring the neck-grip in the first bound, and in avoiding a closely contested struggle. Though evidence of struggle was seen in several cases, such struggles are avoided. If the first rush after the elaborate stalk, which may take days, is not successful, the predator disappears, to nurse his disappointment in solitude. When hunting in pairs, perhaps, they may dare larger and dangerous prey like mules, serow and takin. It has always been a wonder to me how the massive *takin* we saw dead below Chhang La in the Kameng Frontier Division could have been pulled down by even a pair of snow leopards. And the *serow* carcass I examined in the Pilti Nala beyond Mansiari in Kumoun showed obvious signs of a serious struggle, which had ended in the serow demonstrating its proverbial jump over the cliff, only in its wounded condition it succumbed to the jump. Judging from the fact that the snow leopard never returned to the kill, it can be presumed that he, too, was mauled by the serow. It is not on brute strength that either the snow leopard, or the panther, rely for their power to prey.

Seasonal Movements

Before considering the food habits and actual prey of the snow leopard, it would be best to state the observed, though not statistically proven, fact that the snow leopard migrates upwards in spring and summer, and downwards in autumn and winter. This could be either

because of a similar movement of the prey populations, including therein the herds of sheep and goats which are sent up by the hill villagers, or because of this and the additional factor of temperature. There seem to be snow leopards, in the more disturbed and frequented valleys, which prey almost exclusively off domestic flocks, and others, in the wilder valleys, which prey exclusively on the game populations. Much marginal influence is caused by factors like insolation, cloudiness, snowfall, cover, mating and breeding, etc., and much more information is needed before valid conclusions can be drawn.

Food Habits and Feeding Behaviour

Though the longitudinal and latitudinal, as well as elevational, location exercises control over what prey populations will be available, and thus form part of the snow leopard's diet, *Felis uncia* definitely shows a decided preference for ibex and 'bharal' in the terrain and the regions which these two species of prey population inhabit. One of the local names of the snow leopard is 'bharal-mar' or 'bharal-hai', which means the 'bharal-killer'. Shepherds and graziers familiar with the ways of this lovely predator have no doubt that it lives mostly off the *bharal* and the ibex.

My own observations have been partial, depending on the areas where I went out for mountain-climbing, and this was more often than not in Garhwal and Kumoun, where there are no ibex. But when I did go to Lahaul, across the Rohtang Pass, to climb the peaks of the Mulkilla group, I came across three snow leopards, two of which were after ibex. Of two kills seen in Lahaul, both were male ibex. The preference for 'bharal' and ibex may rest on the fortuitous greater availability, as even musk deer is relished, and when found, must be easier to kill, because of its restricted tracks. As to the demonstrable (Table II) preponderance of males in the list of prey, that is easily explained on the basis of the greater ease in overbalancing and upsetting, and catching up on, the heavier, more heavy-headed, horned males rather than the lithe, more observant females.

One would have to visit all the major regions in the snow leopard's range of occurrence to be able to generalise.

Except during the breeding and littering, it is unlikely that snow leopard remain in one location for long, but that they have regular 'beats' and 'ranges' and return to fixed abodes or shelters or 'rahans', in caves and overhangs (Table III) is borne out by the scattered bones and teeth, pieces of skin and hair of all the prey species which are always found in the vicinity or inside, the caves and overhangs frequented by them. Once I sat up four nights in a row, hoping to catch a snow leopard that was doing a round of two glaciers and repeated this every three days. He did not turn up even on the fourth day, so we left for fresh fields and peaks anew. On the fifth day, however, he came back and killed and carried away to its 'shelter' a sheep from a herd a mile away ! This ranging habit is more or less universally

observed all over the Himalayas, and shepherds and sportsmen both mention it with one accord.

I am trying to correlate observations from my diaries into tabular form which might bring out these phenomena clearly, but more facts and sightings are needed to give credibility to the result.

Apart from ibex and *bharal*, *goral* and *serow*, *takin* and musk deer are readily taken. Domestic animals are killed only at night, and eaten with great caution. The snow leopard takes hours to approach his kill, even in the snow. I once watched him slip into position above the 'kill', a *bharal*, in the evening. He descended to the kill, from where my own hole-in-the-snow was some forty yards, in patient slides down, reaching it only around midnight, and even then vanishing like the shadows when I made the slightest of sounds in shifting my weight on the air-mattress which insulated me from the snow. Even when he takes to domestic stock habitually, the snow leopard never loses its great shyness and fear of man and will exaggerate caution to infuriating extremes, much to the chagrin of the would-be hunter or photographer.

Though they are said to eat almost anything, specially during the lean winter season, I have never come across any oddity in its diet. In NEFA I was told by the villagers of Mago that he ate the Woolly Hare (*Oiostolus lepus*) and in Kumoun I have been told they burrow under snow and rocks to catch the *Oiostolus roylei*, but the smallest thing I have known a snow leopard to show interest in was a covey of snow cock that were clucking and waddling along a high ridge on a cloudy day, blissfully unaware of either me or the snow leopard. All three of us were astonished and parted company precipitately when we first, and simultaneously, saw each other across ten yards of the ridge! On other occasions, I have seen bird feathers, probably snow cock, in the droppings of snow leopard.

Though shy and cautious, they show an obstinate determination, born of the harshness of their habitat, and will doggedly stick to flocks of stock despite the ferocious bhotia watch-dogs that guard them; an opportunity generally offers, and several times I have seen sheep freshly killed, both by snow leopards, and by red bear.

Though its predation is conducted in the zone of the alpine vegetation, its optimum habitat seems to be the fantastic overhangs and cliff-rock of the Arctic zone, from where it descends to take toll of the game populations. In the Nanda Devi Sanctuary, this is specially so, as the prey populations are plentiful and competition not excessive. We found the Sanctuary grasslands littered with the skulls and horns of *bharal* presumably killed by snow leopards, as human being do not penetrate the Sanctuary except our own climbing fraternity.

Table II
 Prey of the Snow Leopard: 'kills' actually examined
 Total number

Species	No.	No. Male No. Young	Probable manner of killing	Time of kill	Feeding
'Bharal'	7	6 male	Neck or back broken some signs of struggle	Mostly mornings and evenings	Generally finished off in 2 days, except where pair worked together
Ibex	2	2 male	Neck broken, no struggle	Both in mornings	Eaten in 2 days. Second one removed by us
Musk Deer	2	?	Only remains seen	? probably at night	Finished off in first meal
Goral	2	(a) 1 male (b) 1 female	Probably neck broken	Morning	Finished at one meal
'Thar'	2	(a) 1 male (b) 1 female	(a) 1 forced over cliff in struggle (b) 1 neatly killed by neck-wound	Morning Morning	(a) Came back for remains (b) Never came back, suspicious
Serow	1	1 female	Too badly damaged by fall or jump over cliff to be certain. Signs of struggle	Morning	Never came back. Sus- picious or himself wounded in struggle
Takin	1	1 female	Killed by 2 snow leopards working to- gether. Uncertain	Morning	Returned to kill 2 days later, when we had moved up in NEFA
Dogs	2	—	Neck-hold—strangu- lation ?	Night	Carried away and eaten at night
Calf	2	—	Neck broken— struggle	Night	Eaten on 2 days
Mules	2	—	Neck broken—signs of struggle	Night	Eaten on 3rd day, but never finished. The other did not return
Sheep	8	—	Strangulation ?	Night or late evening	Carried away
Goat	3	—	„	„	Seldom did the predator return to these kills, even when they were left undisturbed

Table III

Shelters examined showing unmistakable signs of recent or sub-recent occupation by snow leopards

Height in feet above sea level	No.	Type	Aspect
16000	4	Overhangs	East and South
15000	11	Overhangs (one crack-cave)	East and South
14000	9	Overhangs	West, East and South
13000	3	Overhangs	East and South
12000	3	(a) 1 cave	(a) North
		(b) 2 overhangs	(b) South
11000	1	Cave with deep ravine and concealed entrance and much scrub cover	N-W
10000	1	Cave, deep in rocky-cleft with thick cover of Bisches.	N-East
9000	Nil	—	—
8000	1	Cave in spruce forest, no ground cover	North

In fact, it is in the Lahaul-Spiti scree, in the Tons Basin and in the Nanda Devi Sanctuary that snow leopard reach their most prolific distribution, possibly because of the availability of food.

Winter must be a time of trial for these animals, and an interesting fact which emerges from Table III is that the aspect chosen for most overhangs is eastern or southern. Caves are used mostly at lower elevations, where risk of disturbance is greater, and in caves, aspect is, naturally, less important.

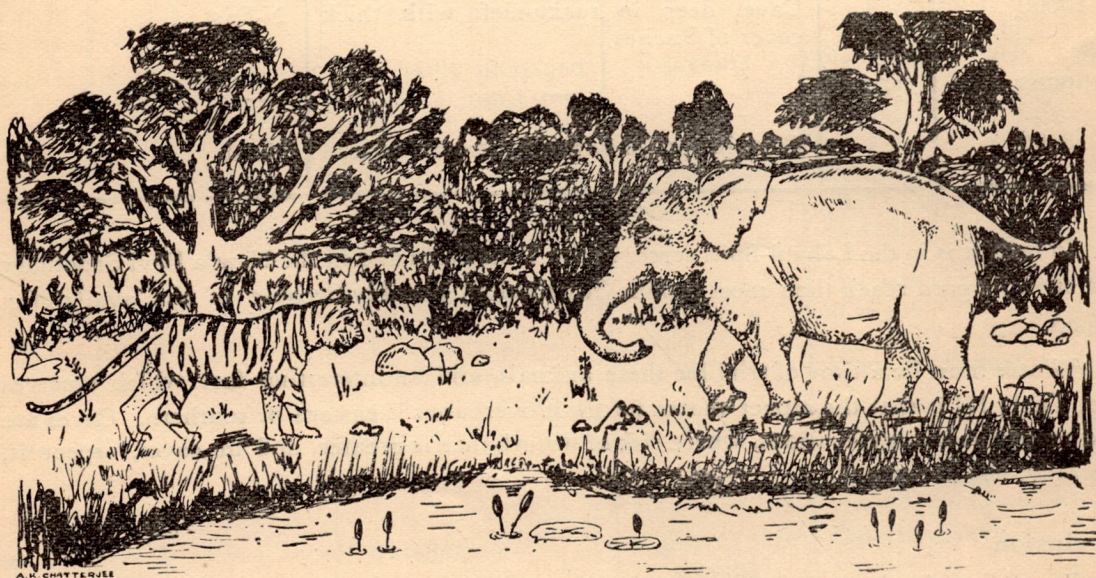
Conclusion

Based on inadequate data, often unjustifiable presumptions, conjecture and unscientific procedures, this paper is, indeed, an inadequate attempt at studying one of the most glorious and the most elusive mountain fauna of the Himalayan complex. That I have

attempted it in the face of this realisation reflects less my folly and ignorance than a determination that the wild life of the Himalayas will not die for default. That, battling against odds, without resources and with but imperfect tools, and worse technique, the author remains convinced of the desperate urgency of the job: This is the message of the job itself. Violently disposed armies stand poised across this vastest *terra* mostly *incognita* of the world's greatest mountains and the world's finest stock of wild creatures, their lavishly divine mountain habitats and the dazzling brilliancy of their snow-dusted summits.

Whether bureaucratic regulations and financial inadequacy will triumph over the puny efforts of the conservationist ideal, or the latter persevere a decisive victory in the first step of a comprehensive book on this, remains for the future to decide.

The snow leopard is only one of thirty major species which should be studied, and on which the author has still only imperfect material. India is only one of the several nations concerned in the fate of Himalayan wild life. And yet, given even such tentative studies of these species, it might be possible to go ahead from there and produce sufficient evidence and material to guide policies and arouse attention to the aid of this finest 'continent' of wild life: The Himalayas.



PALAMAU NATIONAL PARK

(For reference, please see page 55)

Library

The following books and publications were added to the Society Library. The Society thanks the donors and requests members to donate more books or money to make the library more useful.

No.	Name of Book	Remarks
111	The Land and Wild Life of Tropical Asia (Life Nature Library)	Donated by Sri Pratap Singh, Gurukula Kangri, Hardwar
112	Quest of the Snow Leopard by Roy Chapman Andrews	"
113	Vanraj ke Raj Me (Hindi) by Viraj	"
114	Wild Life Bulletin (No. 1, June 1965) by the Indian Board for Wild Life, New Delhi	Complimentary copy
115	Golden Jubilee Souvenir—1926-62 of Southern Forest Rangers' College, Coimbatore	"
116	Maharashtra State Forest Centenary Souvenir, 1847-1962	"
117	Film Catalogue by the Forest Extension Division, U.P.	"
118	Protected Species in U.P. by the Chief Wild Life Warden, U.P.	"
119	Pashu aur Pakshi (in Hindi) by Naresh Singh, Wild Life Warden, Lucknow	"
120	"	"
121	Hathiyon ki Khoj Me (in Hindi) by Sri Viraj, M.A.	Donated by the Author through Sri Pratap Singh, Gurukula Kangri, Hardwar
122	Animal Stories for the Young of all ages by Crystal Rogers	Donated by the Animal Welfare Board, Madras
123	Bharat Banaria Jantu (in Assamese) by Sri Phatik Chandra Gogoi	Donated by Sri P.C. Gogoi
124	Jungle By-Ways in India by E.P. Stebbing, I.F.S.	Purchased
125	The Minds and Manners of Wild Animals by William T. Hornaday, Sc.D., A.M.	"
126	Musings of an Old Shikari by Col. A.I.R. Glasford	"
127	With Gun and Rod in India (published by the Tourist Traffic Branch, Ministry of Transport, Government of India, New Delhi)	Donated by Mr. M.D. Chaturvedi, I.F.S. (Retd.)
128	Narabakshi Baghon ka Shikar (in Hindi) by B.N. Singh	Purchased
129	Bharat ke Pakshi (in Hindi) by Rajeswar Prasad Narayan Singh	"

Reviews

Bharatar Banarea Jantu (India's Wild Animals) written by **Sri Phatik Chandra Gogoi, I.F.S.,**
Deputy Conservator of Forests, Assam.

A bound book of 249 pages with an Appendix; short description, size, habitat, etc., of 94 animals (mammals) each either with a photograph or drawing; prefaced by famous orator Sri Nilamani Phukan; published by the Publication Board, Government of Assam; December, 1966; in Assamese language; with a coloured cover page; price Rs. 12.00.

Sri Phatik Chandra Gogoi is a forest officer of 19 years of experience.

Although short and precise this introduction is very helpful in giving a grasp of the animals dealt with.

The scientific points of each animal have been described in lucid language in Assamese it becomes not at all difficult to understand the animals even for school boys. Besides, he has given interesting habits and social behaviour among the animals themselves, in the same species, with fellow-animals and also with reference to human beings—which makes the book a basis for further study of animals.

The book will serve the good purpose of a reference book for students of Wild Life in Assamese.

Wild Life Department, Assam.

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The Deer and the tiger—A Study of Wild Life in India by **George B. Schaller,**
The University of Chicago Press, 75 shillings, Allied, New Delhi.

Though not freely available in the market, this is, after Mr. E.P. Gee's pioneering volume on the The Wild Life of India, the first successful attempt at a thorough going scientific and ecologically sound study of certain of our plains species.

As the title indicates, the tiger and its natural prey are the chief concern of the study, and Dr. Schaller has painstakingly gone over the ground traversed by sportsmen and amateurs for centuries, in a systematic and scientific manner.

The result of one year's stay in Kanha, with visits to sanctuaries and other areas all over India also, he presents, chapterwise, the ecology of the ungulates, like chital, barasingha, sambar, blackbuck and gaur, and then co-relates this with the ecological relationships and needs of the major predators, of which the tiger, and its life history.

Dr. Schaller does not claim exhaustive or encyclopaedic perfection, but even if it is considered an 'area study', with extrapolations to the rest of the country, this book remains the most complete and accurate statement on the subject. Though not as wide in its coverage as Gee's 'classic', with in its self imposed limitations, it provides the amateur and the enthusiast, as well as the professional forester and zoologist, with a reliable guide to scientific generalisation, so far unavailable in all the sporting literature.

The price of seventy five shillings may prove excessive, and the Government of India would be well-advised to negotiate a cheaper Indian edition for distribution to all Indian forest officers.

Hari Dang

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Journal of the B.N.H.S. Vol. 63 No. 3, December 1966. (Wild Life Issue):

A red-letter year for Indian wild life, with both Dr. Scaller's book, and this excellent issue of the B.N.H.S. Journal !

Juan Spillett, working under the supervision of the noted conservationist, Mr. E.P. Gee, has produced a series of surveys of wild life in North India and Southern Nepal.

These should meet a long-felt need for better documentation, and more scientific studies of the rhinoceros. In addition, there is an excellent study of chital from Corbett Park, and one of the same deer, (introduced earlier, into Hawaii) from Hawaii under more or less controlled conditions.

A very good issue, and we should congratulate the B.N.H.S. on it.

Hari Dang

Editor's Note: The Deer and the Tiger is the subject of a longer 'review-article' in the next issue of 'Cheetal.'

चांदनी और इक्कड़ हाथी

प्रतापसिंह

कुछ वन्य जन्तुओं के संरक्षण पर विचार करते समय अन्य बातों यथा उनके भोजन, निवासक्षेत्र, मनुष्यों से सम्पर्क, संघर्ष आदि के साथ-साथ उनकी आक्रामकता (Aggressiveness) पर भी गहराई से विचार करना जरूरी है। मनुष्य पर आक्रामकता की प्रतिक्रिया होना स्वाभाविक है। जितना ही जन्तु आक्रामक होगा उतनी ही उसे नष्ट कर देने की इच्छा बलवती होगी। निर्दोष चीतलों को मारने की इच्छा किसी किसी के मन में ही पैदा होगी किन्तु शेर या तेंदुए का सामना होने पर हर आदमी यही चाहेगा कि इसे किसी तरह अभी समाप्त कर दिया जाय, कहीं ऐसा न हो कि यह हमें मार दे या घायल कर दे।

प्रत्येक ऐसे जन्तु की आक्रामकता के बारे में निश्चित जानकारी होनी चाहिये। शेर या तेंदुए के बारे में सामान्य आदमी की उपरोक्त धारणा निश्चित जानकारी पर आधारित नहीं है। यह मूलप्रवृत्तिजन्य भय तथा सुनी सुनाई बातों पर आधारित है। शेर या तेंदुआ देखते ही आदमी को नहीं मार डालता। अतः आक्रामकता के बारे में बनी हुई ऐसी भ्रान्त धारणाओं को दूर करने का प्रयत्न हमें करना चाहिये।

शेर के समान ही इक्कड़ हाथी को भी बहुत भय की दृष्टि से देखा जाता है। जंगल में काम करने वाले सभी लोग, गोरखों को छोड़कर, इक्कड़ हाथी से बड़े भयभीत रहते हैं। उसकी विशाल आकृति भय पदा करती है। यदि हाथी मनुष्य को देखते ही छिपने का प्रयत्न नहीं करने लगता तो उसे फौरन मार डालने की मांग की जाने लगती है। यह इक्कड़ हाथी के प्रति सरासर अन्याय है। वह यदि मनुष्य के रास्ते पर खड़ा होने भी लगे तो यह उसकी आक्रामकता नहीं है। यह निडर स्वभाव हो सकता है या उतरती मस्ती के दौर में अपनाया गया उपेक्षा का भाव है। दोनों ही आपत्तिजनक नहीं हैं।

इक्कड़ हाथी कई बार विभिन्न कारणों से उत्तेजित हो जाते हैं। ऐसी दशा में वे हमला भी कर सकते हैं। किन्तु उत्तेजना का प्रभाव मिट जाने पर वे फिर पूर्ववत् हो जाते हैं। ऐसे मौकों पर यदि अधिकारीगण थोड़े धैर्य का परिचय दें और शीघ्रता न करें तो इक्कड़ हाथी का व्यर्थ बलिदान रुक सकता है।

इस सिलसिले में इस वर्ष मार्च मास में लैंसडाउन डिवीजन के डी०एफ०ओ० महोदय ने जिस धैर्य तथा उदारता का परिचय दिया उससे मेरी विचारधारा की पुष्टि होती है।

गंगा के पूर्वी किनारे पर कुनाव नाम के स्थान पर एक इक्कड़ ने एक बुढ़िया को मार डाला। इसके बाद कुछ और व्यक्तियों का भी उसने पीछा किया। कई दिनों तक इस तरह का चलता रहा। डी०एफ०ओ० महोदय जब अपने व्यस्त कार्यक्रम में से समय निकाल पाते तो उसे मारने के लिए कुनाव चले जाते थे। प्रारम्भ में कई प्रकार की कठिनाइयों का सामना करना पड़ा, हाथी से सम्पर्क नहीं हुआ, हुआ तो उसकी

पहिचान नहीं हो सकी या वह भुण्ड के हाथियों के बीच गुम हो गया। अन्त में १४ अप्रैल की रात को वह उन्हें एक शिकारी मार्ग पर आमने-सामने मिल गया। वन विभाग के अन्य कई कार्यकर्त्ता उनके साथ थे जो टार्च से उस पर प्रकाश डाल रहे थे। वे चाहते तो सहज ही में उसे धराशायी कर सकते थे किन्तु उन्होंने निशाना साधने के बाद राइफल नीची कर ली। अवश्य अवसर के अनुकूल उनमें कसुरा का संचार हुआ जो क्षणिक नहीं था नहीं तो वे पुनः उसकी खोज में आते और उसे जरूर मारते। उस हाथी ने भी उसके बाद कोई घटना नहीं की।

शेर यदि एक दो व्यक्तियों को मारकर खा ले तो यह सम्भावना रहती है कि वह अपने मरने तक मानव हत्यायें करता चला जायेगा। किन्तु हाथी द्वारा की गई हत्यायें आवश्यकतापूर्ति के लिए न होकर उत्तेजना के कारण होती हैं। अतः यह आवश्यक नहीं कि हाथी हत्याओं के क्रम को चलाता चला जाय।

इस सबसे आप यह न समझें कि मेरी दृष्टि में हाथी मनुष्य से श्रेष्ठ है और उसे मनुष्यों को मारते रहने की खूली छूट होनी चाहिए। मनुष्य न केवल अपनी शरीर रचना से सभी जन्तुओं से भिन्न है बल्कि उसका सभी जन्तुओं से संघर्ष भी है। कई स्थानों पर यह संघर्ष विरोध का रूप धारण कर लेता है। वहाँ एक के प्रति दया दूसरे के प्रति स्वयं कठोरता बन जाती है। यह विडम्बना अभी तक दूर नहीं की जा सकी है। वन्य जन्तु संरक्षण के लिए मनुष्य को काफी हद तक त्याग तथा उदारता का परिचय देना ही होगा। उसे ऐसे सरल तथा हानिरहित साधनों का आविष्कार करना चाहिए जिससे वन्य जन्तुओं के प्राण अनावश्यक रूप से नष्ट किये बिना ही उनसे पीछा छुड़ाया जा सके। बन्दूक आदि का प्रयोग यदि अनावश्यक खूनखराबी करता है तो अयोग्य हाथों में पड़कर बदमाश (Rogue) हाथी, नरभक्षक शेर और तेंदुए बनाने में सहायक होता है।

इक्कड़ हाथियों को आक्रामक बनाने में जहाँ कुछ उत्तेजनाओं का हाथ है वहाँ कुछ विशिष्ट प्रकार के प्रभाव भी हैं जिनके अन्तर्गत उसका व्यवहार आक्रामक प्रतीत होता है पर वह वास्तव में आक्रामक होता नहीं। इनमें से एक प्रभाव चांदनी रातों का है।

चांदनी रातों में इक्कड़ हाथी लकड़हारों और बनजारों की भोंपड़ियाँ उजाड़ देते हैं, गूजरों की भैंसों के निकट जाकर खड़े हो जाते हैं, जंगलात की चौकी का बहुत पास से निरीक्षण करते हैं या जहाँ भी मनुष्यों की भनक पाते हैं वहाँ उनके निकट पहुंचने की चेष्टा करते हैं। इसका कारण क्या है इस सम्बन्ध में परिकल्पनायें ही प्रस्तुत की जा सकती हैं। हाथी की सफेद वस्तुओं से चिढ़ प्रसिद्ध है। सम्भवतः चांदनी में जो वस्तुएं अधिक सफेद चमकती हैं उनको मिटा देने के विचार से हाथी उनके पास जाता है। सम्भवतः चांदनी में शंकापूर्ण वस्तुओं को अर्धस्पष्ट देख पाने पर हाथी उनको स्पष्ट रूप से जानने के लिए उनके निकट जाते हैं। या चांदनी के कारण उनके मन में शरारत जागती है। कुछ भी हो ऐसे अनुभव न केवल मेरे साथ गुजरे हैं बल्कि जंगल में रहने वाले लोग भी ऐसी बहुत सी घटनायें बताते हैं। हाँ, आज तक मैंने किसी के मुख से इन घटनाओं के गम्भीर रूप धारण करने का वर्णन नहीं सुना है। अतः कुल मिलाकर मैं इसे हल्की उत्सुकता (Mild

Curiosity) का परिणाम भी मानने को तैयार हूँ। इनमें हाथी थोड़ी छेड़-छाड़ या थोड़ी देर तंग करने के बाद चला जाता है। यह प्रवृत्ति भुण्ड के हाथियों में नहीं पाई जाती क्योंकि उनकी गतिविधियाँ अपने साथियों से बंधी होती हैं। किन्तु इक्कड़ तो अपनी मर्जी का मालिक है अतः वह शरारत कर ही डालता है।

मेरे साथ चांदनी रातों वाला सबसे रोमांचक अनुभव जून १९६५ का है।

सिद्धाश्रम के जंगल में नदी के किनारे एक टीले के कगार पर खड़े एक छोटे वृक्ष पर हम पहले ही मचान बांध आये थे। इस टीले पर हर साल जाड़ों में कोई न कोई गूजर अपना डेरा डालता है। ऊँचा होने के कारण हाथी के अचानक आक्रमण से बचने के लिए ही वे यहाँ ठहरते हैं। यह टीला नदी के तल से लगभग ८ फुट ऊँचा है जिसका पश्चिमी भाग एक ऊँची पहाड़ी से घिरा है। नदी पूर्व से आई है और टीले के पास ही एक नाला पश्चिम से आकर इसमें मिला है जिसे पूर्वी चण्डी सोत कहते हैं। संगम के बाद नदी टीले के नीचे से दक्षिण की तरफ गई है।

यह सारा क्षेत्र छोटी बड़ी बाँस भरी पहाड़ियों, तंग नालों और नदी के हर मोड़ पर बने छोटे-छोटे घास के मैदानों से भरा है। इसमें कई रास्ते इधर उधर गये हैं।

उस सायं हम तीन व्यक्ति उस मचान पर रात बिताने के लिये निकले। गंगा पर बना हुआ लकड़ी का पुल टूट गया था जिससे कि हमें नाव द्वारा पार होने में कुछ अधिक समय लग गया और चण्डी घाट पर ही सात बज गये। पहाड़ों से बाहर जाने वाली सड़क से मचान ५-६ मील पड़ती थी। किन्तु सामने के चण्डी सोत से वह तीन ही मील थी। जहाँ यह सोत समाप्त होता है वहाँ पहाड़ पर चढ़कर दूसरी तरफ उतरने पर पूर्वी चण्डी सोत में पहुँच जाते हैं जो मचान के पास ही पहुँचा देता।

बहुत गर्मी थी और सूखी हवा के कारण बार-बार प्यास लग रही थी। इस नाले में दोनों तरफ पहाड़ हैं, बीच में कहीं-कहीं पानी जमा था। सबसे पहले पहाड़ के ढाल पर खड़ा एक सांभर भाग खड़ा हुआ। ये गर्मियों में कुछ काले रंग के दीखते हैं मानो गर्मी से भुलस गये हों। एक और पानी के कुण्ड के पास दो काकड़, कई चीतल और नीलगायें और एक सूअर दिखाई दिये जो भागकर पहाड़ी के ऊपर चढ़ने लगे। इन्हें देखकर हमें प्रसन्नता हुई और यह आशा भी बंधी कि अभी और भी जानवर देखने को मिल सकते हैं। हम बड़ी सावधानी से आगे बढ़ने लगे।

पहाड़ की चढ़ाई कर पूर्वी चण्डी सोत में उतर गये। इसमें एक निश्चित स्थान तक हाथी के मिल सकने का खतरा था अतः यद्यपि हम बातें करते जा रहे थे पर आँखें उस पर्वताकार शरीर को ढूँढ़ निकालने में व्यस्त थीं।

वह निश्चित स्थान, जहाँ एक रास्ता उत्तर की तरफ से आया था, गुजर गया और हम अब हाथी की तरफ से निश्चिन्त हो गये। लगभग १०० गज और गये होंगे कि दाईं तरफ पहाड़ की ढाल पर धूल उड़ती दिखाई दी। लंगूर भागकर पहाड़ी पर चढ़ते जा रहे थे। लंगूरों का मूलमन्त्र “सावधानी और उपाय”

मालूम पड़ता है। किन्तु अपनी सावधानी और उपाय से ये कभी सन्तुष्ट नहीं होते। यदि १०० फुट ऊँचे वृक्ष पर बैठे होंगे तो आदमी को देखकर और ऊपर चढ़ने की चेष्टा करेंगे। अपने और खतरे के बीच अधिक से अधिक दूरी रखने पर भी ये भयभीत ही रहते हैं।

अभी हम लंगूरों के बारे में सोचते हुए ही बढ़ रहे थे कि सामने से फुंकार सुनाई दी। अजगर न हो, या कोई साँप हो !! अजगर के साथ लंगूरों का पुराना सम्बन्ध चला आता है।

नाला सर्पाकार घूमता हुआ गया था और रास्ता बार-बार उसको पार करता हुआ सीधी रेखा में। हमसे २०-२५ गज दूर नाले के उस पार जामुन के नीचे वही इक्कड़ खड़ा था जिसकी तरफ से हम निश्चिन्त हो गये थे। सूंड ऊपर उठाकर हमारी गंध ले रहा था। पहले उसने जो फुंकार मारी थी वह स्पष्ट गंध लेने के लिए सूंड में से हवा निकालने की थी। यदि वह आवाज न करता तो हम अनजाने में ही उसके बहुत पास पहुँच जाते। फिर पता नहीं घटनाक्रम किस प्रकार चलता? मेरे साथी डटे खड़े रहे और मैंने बचाव के लिये उसी पहाड़ी पर चढ़ने का प्रयत्न किया जिस पर लंगूर चढ़े थे।

ऐसे समय में वह हमें देखकर आश्चर्य में पड़ गया होगा। मुझे पूरी आशा थी कि वह हमारी तरफ भपटेगा— बीच में केवल सूखा नाला ही तो था। पर साथियों को डटे देखकर उसने २-३ बार सूंड ऊपर नीचे हिलाकर अपना असन्तोष व्यक्त किया और क्रोध में भरा हुआ सिद्धाश्रम की तरफ चला गया।

इस समय दिन का प्रकाशन बराबर कम होता जा रहा था। दोनों तरफ ऊँचे-ऊँचे पहाड़, बीच में खूब मोड़ लेता हुआ तंग नाला और प्रारम्भिक अन्धेरा। हमें वही रास्ता लेना था जो हाथी ने लिया था। कुछ दूर आगे बढ़ने पर हमारे साथी सेवाराम जी ने कहा कि हाथी रास्ते के किनारे मोड़ पर भाड़ियों की ओट में खड़ा हो सकता है। मुझे लगता था कि हाथी जा चुका है, पर सावधानी रखना क्या बुरा है अतः हम लोग दाईं तरफ के पहाड़ पर चढ़ गये और अन्धेरे में भाड़ भंकाड़ों से टकराते खड़बड़ करते हुए आगे बढ़ने लगे।

हमारी सारी मुठभेड़ें गर्मियों में शाम को रास्ते में देर हो जाने पर हुई हैं। यह भी उनमें से एक थी। यदि हम पहाड़ पर न चढ़ते तो मोड़ पर से गुजरते। ऊपर से जब हम मोड़ के बराबर में आये तो हाथी के चलने का शब्द सुनाई दिया। अब यह निश्चित रूप से नहीं कहा जा सकता कि वह छापा मारने के लिये उपयुक्त स्थान पर खड़ा था या अभी जा ही रहा था।

यदि हाथी दुष्ट और निडर होता तो पहले ही हम पर भपटता, पर वह चालाक प्रतीत होता था और छिपकर आक्रमण करना चाहता था। आगे अभी और मोड़ थे। पहाड़ पर यद्यपि हम उससे पूरी तरह से सुरक्षित नहीं थे पर वहाँ अचानक छापा मारना उसके लिये संभव नहीं था। पहाड़ चढ़ने का दूसरा लाभ यह हुआ कि हमें दुबारे नाले में नहीं उतरना पड़ा। हम सीधे टीले पर ही उतरे। सामने नदी के पार कुछ चितल घूम रहे थे।

सामान मचान पर रख दिया गया। टीले पर छीपाई गई सुराही भी ढूँड निकाली। कनवास के थैले में जो पानी लेकर चले थे वह प्यास के कारण रास्ते में ही पीकर समाप्त कर दिया था। प्यास और लग रही

थी, भोजन भी करना था और सारी रात सामने थी जो बिना पानी के बीतनी कठिन थी। जिस पानी के भरोसे आये थे वह वहाँ से एक फर्लांग दूर जंगल के बीच में था। उसमें भी थोड़ा-थोड़ा पानी निकलता था जिससे सुराही भरने में घंटों लगते। हाथी उधर ही गया था। यदि पानी भरते समय बहुत ही चुपचाप पास आ खड़ा हुआ तो !!! पहले तो हम उसके लिये अप्रत्याशित थे किन्तु अब तो उसे हमारी निश्चित जानकारी थी। नहीं, पानी लेने वहाँ जाना संभव नहीं था।

तब तक चांद निकल आया—पूर्णमासी का चांद। सारा जंगल, पहाड़ियाँ, घाटियाँ, नाले मोहक स्वच्छ चांदनी से भर गये और हाथी का आंतक हमारे मन से दूर हो गया, आशंका जरूर रही। टीले के नीचे गन्दा पानी भरा था। हाथी ऐसे पानी को नहीं पीता अतः उसने वहीं पास में कुछ गड्ढे अपने आप खोद रखे थे। उन्हीं में से पानी लेने का विचार कर नीचे उतरे। पर हाथी के उन गड्ढों में पानी नहीं निकला था। अभी सोच ही रहे थे कि एक गड्ढा और दिखाई दिया, कांगड़ी गाँव के बूढ़े चरवाहे का खोदा हुआ। इसमें पानी था। उसे साफ कर सुराही व पानी का थैला भर लिया। बीच बीच में हम चारों तरफ देख भी लेते थे।

पानी लेकर जैसे ही टीले पर चढ़े कि सुराही गलकर गिर गई। गरदन हाथ में रह गई। खैर, थैले के पानी से भोजन किया और उसे पुनः भर कर मचान पर जा बैठे।

मचान तिकोनी थी, उस पर तीन आदमी केवल बैठ ही सकते थे। यह भूमि से लगभग १५ फुट और टीले पर से ७ फुट ऊँची होगी। वैसे मचान नदी के ऊपर थी। यह सब सावधानी हाथी से बचाव के लिए ही की गई थी क्योंकि पेड़ बहुत पतला और छोटा था। मचान पर सोना तो था ही नहीं, वन्य जन्तुओं को देखना और उनकी आवाजों को सुनना था। इसलिए हम डटकर बैठ गये।

यह टीला हमारा पुराना परिचित था। कितनी ही घटनायें इस पर हुई। कभी हाथी के कारण सारी रात प्यासे बितानी पड़ी, कभी हाथी इसके ऊपर ही चढ़ आया और भूमि पर बैठे लोगों के प्राण संकट में पड़ गये, कभी लकड़बग्घा यहाँ से गया। एक बार गूजर के डेरे में रीछ घुस आया था।

वैसे चांदनी रातों में, कम से कम गर्मी में पशु-पक्षी बहुत बोलते हैं पर आज की रात लगभग नीरव थी। एक दो शब्द चीतल और सांभर के, एक दो मोरों के—बस।

११ बजे से उत्तर पूर्व में डालें तोड़ने का शब्द सुनाई पड़ने लगा। हाथी अपना पेट भरने में लगा था जो कभी नहीं भरता। पतली टहनियों और छाल के लिये उसे डालें तोड़नी पड़ रही थीं। सेवाराम जी का विचार था कि हाथी रात में कई बार हम पर आक्रमण करेगा इसलिए हम शब्दों द्वारा ही हाथी की गतिविधि का अनुसरण कर रहे थे। मेरी व्यक्तिगत राय यह थी कि हाथी अकस्मात् संयोग से रास्ते में हमें मिल गया था। यहाँ चूँकि हम एक किनारे छिपे बैठे थे अतः हमें कोई भय नहीं था।

हाथी खाता हुआ उत्तर पूर्व से दक्षिण की तरफ चला गया और आवाजें आनी बन्द हो गई। हमने समझा कि हाथी चला गया है। कुछ निराशा भी हुई क्योंकि मन लगाने वाली कोई वस्तु ही नहीं रही। इस सारे समय हमने हाथी को फिर नहीं देखा था। केवल आवाजें सुनी थीं।

लगभग दो बजे नदी के दूसरी तरफ हाथी चुपचाप घूमता हुआ दिखाई दिया। अभी उसकी चाल में निरुद्देश्यता थी। तभी हमारे मित्र को खांसी आ गई। हाथी ने अवश्य इसे सुना होगा क्योंकि अब वह हमारी दिशा में बढ़ने लगा। सामने एक सूखा शीशम का पेड़ था जिस पर एक आंधी की रोमांचक रात और मचान की पहली रात हमने कभी बिताई थी। हाथी उसकी ओट में खड़ा होकर अपनी सूंड के अग्रभाग को प्याला सा बनाकर गंध लेने लगा वृक्ष की ओट लेने की उसकी चेष्टा अत्यन्त हास्यास्पद थी। इस सम्बन्ध में किसी पत्रिका में छपा एक व्यंग्य चित्र याद आ गया जिसमें एक मोटा व्यक्ति एक पतले से वृक्ष के पीछे खड़ा अपने कुत्ते से पूछ रहा है कि बताओ मैं कहाँ छिपा हूँ।

हवा की दिशा तो मुझे याद नहीं है पर सम्भवतः गन्ध पाकर या साथी के सफेद कपड़ों की झलक पाकर हाथी हमारी स्थिति को जान गया। दबे पांव टीले के नीचे आया और दीवार के साथ साथ चलता हुआ पूर्वी चण्डी सोत में चला गया। अभी तक मुझे यह अनुमान न था कि उसे हमसे कुछ वास्ता था। मैंने समझा कि वह खाता हुआ पूर्वी चण्डी सोत में चला जायेगा। पर वह ऊपर चढ़ने के रास्ते पर उगे हुए बांसों को खाता हुआ धीरे-धीरे टीले के ऊपर चढ़ आया और हमारे वृक्ष से ७-८ गज की दूरी पर खुले स्थान पर निःशब्द खड़ा होकर हमारी तरफ देखने लगा। हमारा मित्र सफेद कपड़े पहने हाथी के निकट पड़ने वाली शाखा पर बैठ गया। हाथी उसी सफेदी पर अपना ध्यान केन्द्रित किये था।

जब तक वह नीचे घूम रहा था तब तक न तो वह विशालकाय और प्रभावशाली ही लग रहा था न ही हमें उससे कुछ भय ही मालूम पड़ा था। किन्तु जब वह इतने निकट आकर खड़ा हो गया तो उसकी चौड़ी छाती और खम्भे जैसी मोटी-मोटी टांगें देखकर हम भयभीत हो गये। एक ही टांग हमारा कचूमर निकालने के लिए काफी थी। दाँत यद्यपि दोनों थे किन्तु वे कुल २-२ या ढाई-ढाई फुट के होंगे जिससे हाथी की शान काफी घट गई थी। बड़ा हाथी, छोटे दाँत।

शान कम हो या अधिक, हम अपने को बड़े संकट में फंसा हुआ पा रहे थे। इस तरह से सामने खड़े होने का कुछ न कुछ प्रयोजन अवश्य था। या तो वह सूंड से वृक्ष को खींच लेता या सिर से धकेल देता। सम्भव है वह देखकर चला जाता, पर निश्चय नहीं था। कुछ न कुछ करना जरूरी था नहीं तो दुर्घटना हो सकती थी।

हमारे पास एक शीशी में मिट्टी का तेल था और चीथड़े भी थे। पर इस गर्मी के मौसम में आग का प्रयोग ठीक न होता। फिर पता नहीं थोड़ी सी लपटों को देखकर हाथी भागता या नहीं।

बिगुल मेरे हाथ में ही था। मैंने उसे ऊँचे तीखे स्वर से फूँका। २-३ फूँकें लगाईं। एक क्षण तो हाथी चकराया खड़ा रहा। फिर मुड़कर जिधर से आया था उधर ही फिसलता हुआ नाले में उतर कर इतनी तेजी से भागा कि उसकी सारी गतियों को हम स्पष्ट देख भी न सके।

सवा तीन बजे चाँव पश्चिम में पहाड़ी की ओट में हो गया। हल्का सा अंधेरा छा गया और उत्तर की

तरफ से डाल तोड़ने की आवाजें फिर आने लगीं। साथी का विचार था कि हाथी पुनः आयेगा पर तब तक दिन निकल आया और हाथी कहीं विलीन हो गया।

हम जिस रास्ते से आये थे उसी से लौट पड़े। एक स्थान पर एक काकड़ बांसों के भुरमुट के नीचे ध्यानमग्न खड़ा था। उसने अपने से ७-८ फुट की दूरी पर खड़े मुझे नहीं देखा। जब मैंने साथियों को संकेत किया तो वह इतना डर गया कि बहुत देर तक जोरों से भूंकता रहा और भाग कर पहाड़ी पर चढ़ गया। रास्ते में एक जगह लंगूर भी चेतावनी दे रहा था।

इस रास्ते में भी रात को एक इक्कड़ घूम रहा था। उसने जगह-जगह बांसों के पत्ते तोड़कर डाल रखे थे।

हाथी दिन में हमें देखकर भाग गया किन्तु चांदनी रात में जानबूझकर टीले के किनारे ऊंचाई पर बने मंचान के निकट आया। इस तरह की और भी कई घटनायें मुझे यह सोचने पर मजबूर करती हैं कि चांदनी रात का हाथी पर अवश्य कुछ प्रभाव रहता है।

मैं स्वयं ऐसे जंगलों में घूमने का इच्छुक नहीं हूं जहाँ हाथी, विशेषकर इक्कड़ हाथी न रहता हो। क्योंकि इससे जंगल में जो एक प्रकार का सनसनीपूर्ण रोमांच, एक आशंका, एक अज्ञात संकट की भावना बनी रहती है उससे बिना शिकार खेले, शिकार का आनन्द प्राप्त होता है।

जानवरों में दुम का महत्व

वन्दना

इस समय पर अनेक किम्बदन्तियाँ हैं। कुछ के अनुसार दुम एक आवश्यक अंग है जो कि समय-समय पर हथियार, सहारा, सुन्दरता और अन्य भावनाओं को प्रकट करने में सहायक होती है और कुछ के अनुसार दुम एक आवश्यक अंग है क्योंकि कुछ जानवरों में जैसे कि बनमानुस में दुम के न होने पर भी सब कार्य सरलता से सम्पन्न हो जाते हैं। जानवरों की दुम की हरकत देखकर मनुष्य उनकी भावनायें समझ सकता है, जैसे कि कुत्ता दुम हिलाकर अपनी प्रसन्नता प्रकट करता है और शेर या गुलदार की दुम का छोर हिलता देखकर मात्तुम होता है कि वह हमला करने के लिये तैयार है।

कुछ बन्दर अपनी लम्बी पूंछ से एक गोला बना कर उसे भूमि पर फैला देते हैं और शेष भाग को सीधा खड़ा करके उसे बैठने के काम में उसी प्रकार से लाते हैं जैसे कि एक कुर्सी से लिया जा सकता है। कुछ अन्य

बन्दरों में, उदाहरण के लिये लंगूर में दुम का प्रयोग एक हाथ की तरह से किया जाता है जो कि विशेष कर पेड़ों की शाखाओं को पकड़ने में सहायक होती है।

उदबिलाव (Weaver) की दुम एक पतवार का काम करती है एवं पेड़ों को काटते समय उसे सहारा भी देती है। इसकी पूंछ खतरे के समय संकेत देने का काम भी करती है।

साल (Pangolin) की पूंछ उसके लिये भोजन पकड़ने में सहायक होती है। वह अपनी पूंछ से चींटियों को घेर लेता है।

उड़ने वाली गिलहरियाँ एक पेड़ से दूसरे पेड़ पर छलाँग लगाते समय अपनी पूंछ से पतवार का काम लेती हैं, जो कि उनका सन्तुलन बनाये रखने में सहायक होती है। किसी ऊँचे स्थान से गिरते समय यह रोयेंदार पूंछ एक हवाई छतरी का काम करती है तथा उनको चोट लगने से बचाती है। सर्दियों में पूंछ सिर व शरीर को गर्म बनाये रखने में सहायक होती है। पाँडा (Panda) भी अपनी पूंछ से इसी तरह का काम लेता है।

साही के काँटे उसकी आत्म-रक्षा के साधन हैं। जब कोई शत्रु उस पर आक्रमण करता है तो वह अपने सारे शरीर के काँटे खड़े कर लेती है। उस समय उसकी दुम के पास के खोखले काँटे एक विशेष प्रकार की ध्वनि उत्पन्न करते हैं, जो कि शत्रु के लिये चेतावनी होती है।

कंगारू (Kangaroo) पीछे की ओर झुक कर अपनी पूंछ का सहारा उसी प्रकार से लेता है जिस प्रकार कि एक शिकारी अपने डंडे से लेता है।

लोमड़ी की दुम बहुत लम्बी होती है और पीछे मोड़ने पर उसकी नाक तक पहुँच जाती है। सर्दियों में लोमड़ी अपनी दुम को घुमा कर उससे अपनी नाक ढक लेती है। और ठंड से अपना बचाव करती है।

शेर जब अपने शिकार को पकड़ने के लिये लम्बी छलाँग लगाता है, तो उस समय उसकी पूंछ भी पतवार की तरह से काम करती है और सन्तुलन बनाये रखने में सहायता प्रदान करती है।

गाय व भैंसे अपनी पूंछ की छोर से मक्खियाँ व अन्य कीड़े उड़ाने का काम लेती हैं।

कुत्ते अपनी भावनायें अपनी दुम की सहायता से प्रकट करते हैं। वह अपनी पूंछ हिलाकर अपनी प्रसन्नता प्रकट करते हैं। जब वह बहुत गुस्से में होते हैं एवं लड़ने के लिये तैयार होते हैं तो उनकी दुम अकड़ जाती है व सीधी खड़ी हो जाती है और जब वह बहुत डरे हुये होते हैं तो अपनी पिछली दोनों टाँगों के बीच अपनी पूंछ को दबा लेते हैं।

बिल्लियाँ व कुत्ते अपने मालिक के पैरों पर अपनी पूंछ व शरीर रगड़ कर अपनी प्रसन्नता प्रकट करते हैं तथा अपनी स्वामी-भक्ति का परिचय देते हैं। सर्दियों में बिल्ली अपने शरीर व पूंछ के रोयें फुला लेती हैं और अपनी पूंछ को अपने चारों ओर लपेट कर बैठती है।

काकड़ व चीतल विपत्ति के समय दुम उठा कर सफेद भंडी दिखाते हुये भाग जाते हैं।

चूहे जिन छेदों में खुद नहीं घुस पाते हैं वहाँ से अपनी पूँछ की सहायता से बहुत चतुरता-पूर्वक अपने लिये भोजन-सामग्री निकाल लेते हैं।

विशालकाय छिपकलियों में दुम का उपयोग आत्म-रक्षा के साधन, के समान होता है। छोटी छिपकलियाँ खतरे के समय पूँछ से अपनी रक्षा का काम लेती हैं। जब उनका बहुत तेजी से पीछा किया जाता है तो अचानक वह अपनी पूँछ को शरीर से अलग फेंक देती हैं जिससे कि शत्रु का ध्यान बंट जाता है और वह अपनी जान बचाने में सफल हो जाती हैं।

एक साँप (Glass-Snake) जब बहुत अधिक डर जाता है तो अपनी पूँछ को अलग छोड़ देता है।

जलचरों की पूँछ उनके चलने फिरने व तैरने में सहायक होती है। मगरमच्छ की पूँछ आक्रमण करने में हथियार का काम देती है। इसके विपरीत पूँछ शत्रुओं से बचने में भी सहायक होती है। पूँछ के निरंतर हिलते रहने के कारण जब कोई शत्रु आक्रमण करता है तो वह अपने शिकार की पूँछ के पिछले हिस्से के कुछ बालों को ही पकड़ने में सफल हो पाता है। शत्रु से घिर जाने पर जानवर अपनी पूँछ को फुला लेते हैं और इस प्रकार उसे बेवकूफ बनाने में सफल होते हैं।

शहद की मक्खी जब अचानक किसी छत्ते को छोड़ देती है तो अन्य मक्खियों से पेड़ की शाख से अपने को बचाने के लिये अपनी पूँछ की सहायता से पेड़ की शाख से नीचे लटक जाती है। पूँछ उसके भागने में भी सहायता करती है।

पक्षियों में दुम उनकी सुन्दरता बढ़ाने में सहायक होती है। इसके साथ-साथ पूँछ पक्षियों की उड़ान में भी सहायक होती है। उड़ते समय पक्षियों की पूँछ उनकी चाल को नियमित करने में, दिशा बदलने में, रोकने में तथा भूमि पर उतरने में भी सहायता देती है। अगर उड़ते समय दुर्घटनावश किसी पक्षी की दुम टूट जाती है तो इससे उनकी गतिविधियों पर कोई प्रभाव नहीं पड़ता है क्योंकि ऐसे समय पर उसके पंख मार्ग निर्धारित करने में, सन्तुलन स्थापित करने में तथा गति को नियमित करने का कार्य भी करते हैं।

कुछ पक्षियों में, विशेष कर मोर में, पूँछ उनका आकर्षक बढ़ाने में भी सहायक होती है।

उपरोक्त वर्णित उदाहरणों से इस कथन की पुष्टि होती है कि दुम एक अति आवश्यक अंग है। यह जन्तुओं को कार्य करने में सहायता प्रदान करती है और साथ-साथ किसी प्रकार की हानि भी नहीं पहुँचती है।

THE PRESIDENT,
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TOURISTS' GUIDE TO NATIONAL PARKS AND SANCTUARIES

98

Sl. No.	Name of National Park or Sanctuary	District and State	Area in sq. miles	Best months for visiting	Main Wild Life Attraction	Enquire from
1	Bandipur and Venugopal	Mysore Distt., Mysore	310.34	January to July	Bison, Elephant	Divisional Forest Officer, Mysore City, Mysore
2	Betla	Palamau, Bihar	96.20	February to June	Tiger, Panther, Bison	Divisional Forest Officer, Daltonganj South, P.O. Daltonganj, Bihar
3	Corbett National Park	Garhwal, Nainital and Almora, Uttar Pradesh	125	February to May	Elephant, Tiger, Panther, Cheetal, Sambhar, Fishing	Chief Wild Life Warden, Uttar Pradesh, Lucknow, U.P.
4	Dachigam	Srinagar, Jammu and Kashmir	63	April to October	Kashmir Stag, Musk Deer, Pheasants, Himalayan Bear	Chief Conservator of Forests, Srinagar, Kashmir
5	Gir Forest	Junagadh, Gujarat	525	December to May	Indian Lion	Divisional Forest Officer, Gir Division, Junagadh, Gujarat
6	Jaldapara	Jalpaiguri, West Bengal	36	January to April	Rhino, Elephant, Tiger	Divisional Forest Officer, Cooch Bihar, W.B.
7	Kanha	Mandla, Madhya Pradesh	97.7	February to June	Tiger, Bison, Swamp deer, Chital, Black-buck	Divisional Forest Officer, West Mandla Division, Mandla, M.P.
8	Kaziranga	Sibsagar, Assam	166	January to April	Rhino, Buffalo	Divisional Forest Officer, Sibsaigar Division, P.O. Jorhat, Assam

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Sl. No.	Name of National Park or Sanctuary	District and State	Area in sq. miles	Best months for visiting	Main Wild Life Attraction	Enquire from
9	Keoladeo Ghana	Bharatpur, Rajasthan	7000 Acres	August to February	Migratory Water Birds and Cheetal	Divisional Forest Officer, Bharatpur, Rajasthan
10	Mudumalai	Nilgiris, Madras	120	January to June	Elephant, Bison, Tiger, Panther, Bear, Spurfowl	Distt. Forest Officer, Nilgiris Division, Ootacamund
11	Periyar Lake	Kottayam, Kerala	300	December to May	Elephant, Bison, Tiger, Bear	Wild Life Warden, Permade, Kerala
12	Rajaji	Saharanpur, Uttar Pradesh	173	December to June	Elephant, Tiger, Bear, Cheetal	Divisional Forest Officer, Siwalik Forest Division, Dehra Dun, U.P.
13	Shivpuri	Shivpuri, Madhya Pradesh	61	November to June	Tiger, Panther, Sambhar, Bear	Divisional Forest Officer, Shivpuri, M.P.
14	Tadoba	Chanda, Maharashtra	45	December to June	Tiger, Panther, Bison, Sambhar	Chief Wild Life Warden, Maharashtra State, Poona
15	Vedanthangal	Madras, Madras	74 acres artificial lake	November to April	Pelicans, Black-buck	State Wild Life Officer, 136, Peters Road, Madras-14

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